

Building Ordinances

City and County of
San Francisco . . .

Adopted February 6th 1903

Board of Public Works	-	Telephone South 562
Bureau of Streets	- -	Telephone South 186
City Architect	- -	Telephone South 1049

PRICE 25c.

If you want to know what is
going on in the building busi-
ness subscribe for



The Pioneer Building Daily
Delivered every business day
for one dollar per month.
1508 Market St. Phone South 781

Ring up Tel. South 725.

BENNETT BROS.

FINE BUILDING HARDWARE

—HEADQUARTERS FOR—

Nails, Sashweights,

Building Paper,

Hangers, Etc.

35 SIXTH STREET,

SAN FRANCISCO,

-

CAL.

SAN FRANCISCO HISTORY CENTER



SAN FRANCISCO
PUBLIC LIBRARY

REFERENCE
BOOK

Not to be taken from the Library

-
c
s
e
1
8

Ring up Tel. South 725.

BENNETT BROS.

FINE

Nails

SAN

Always progressive and up to date.—
That's the motto of the Daily Pacific
Builder. The daily pointers in its columns
will convince you of this fact. Subscribe
now. 'Twill be the best investment you
ever made.—Tel. South 781 or address 1508
Market St. S. F.

Successful men are advertisers.—They advertise liberally as well as judiciously—the most successful men in the building business are advertisers in the Daily Pacific Builder. “Birds of a feather flock together” you know.—Are you in their class? Ring up South 781 and let us talk it over with you. Daily Pacific Builder.

THE DAILY PACIFIC BUILDER gives daily reports on contemplated improvements up and down the entire coast as well as accurate transcripts of building records. Suscribe now and keep posted.

One Dollar per month.

1508 Market St. Tel. South 781.

BILL NO. 465.

ORDINANCE NO. 645.

REGULATING THE CONSTRUCTION,
Erection, Enlargement, Raising, Al-
teration, Repair and Use of Buildings.

Be it ordained by the People of the City
and County of San Francisco as follows:

(Buildings Hereafter Erected, Altered,
Enlarged or Built Upon.)

Section 1. Every building hereafter erect-
ed, altered, enlarged or built upon, shall
be erected, altered, enlarged or built upon
in accordance with the provisions of this
ordinance.

This ordinance shall not apply to the
height, or mode of construction of build-
ings for the erection of which permission
was granted by the Board of Public
Works prior to its passage.

Sec. 2. No building already erected, or
being erected, in the City and County of
San Francisco, shall be enlarged, raised,
altered or built upon, otherwise than in
accordance with the provisions of this
Ordinance.

(Meaning of Terms in This Ordinance.)

Sec. 3. "Alterations" means any change
or addition.

"Repairs" means the reconstruction or
renewal of any existing part of a build-
ing, or of its fixtures or appurtenances,
by which the strength or the fire risk is
not affected or modified.

"Party wall" means a wall that sepa-
rates two or more buildings, and is used,
or is to be used jointly by said buildings.

"Partition wall" means any interior
wall in a building.

"Bearing wall" means a wall inside of a
building which is to support the different
floors, at places where the joists are not
of sufficient depth to sustain the load im-
posed upon them.

"Exterior wall" means every outer wall

or vertical inclosure of a building other than a party wall.

"Thickness of a wall" means the minimum thickness of such wall, between floors, or between floor and ceiling or roof.

"Cellar or basement" means a lower story, any part of which is below the level of the street, or streets, on which it faces, or of the general level of the ground, for more than one-half the height of such lower story.

"Story" means (for the purpose of calculating the thickness of foundation and size of studding) any part of a building of which three-quarters or more is above the level of the street or streets on which it faces, or the general level of the ground, or which exceeds 7 feet 6 inches in height.

(Measurements for Height and for Width of all Buildings.)

Sec. 4. For the purpose of this ordinance, the greatest linear dimension of any building shall be its length, and the next greatest linear dimension its width. The height shall be measured from the curb line opposite the center of the principal front for all buildings except those on a street corner.

For buildings erected on a street corner the measurement shall be taken from the curb line opposite the center of either front.

When the walls of a structure do not adjoin a street, the average level for the ground adjoining the walls may be taken instead of the curb level for the height of such structure.

And heights shall be measured from above lines to the under side of ceiling joists for flat roof and one-half the height of roof for a pitch roof.

Any roof or portion of a roof above the extreme height allowed by this Ordinance must not have a slope with the horizon of more than forty-five degrees.

(Dwellings, Definition of.)

Sec. 5. A "dwelling" is every building which shall be intended or designed for, or used as, the home or residence of not more than two separate and distinct families or households, and in which not more

than fifteen rooms shall be used for the accommodation of boarders, and no part of which structure is used as a store or for any business purpose. Two or more such dwellings may be connected on each story when used for boarding purposes, provided the halls and stairs of each house shall be left unaltered, and kept open and in use as such.

(Apartment Houses, Definition of.)

Sec. 6. An "apartment house" is a building containing separate apartments, with self contained conveniences for three or more families, having a street entrance common to all.

(Tenement Houses, Definition of.)

Sec. 7. A "tenement house" is a building similar to an apartment house, except that the tenements of which it is composed have no self-contained conveniences

(Flats, Definition of.)

Sec. 8. "Flats" is a building of two or more stories containing separate (self contained) dwellings, each having an independent street entrance.

(Hotel, Definition of.)

Sec. 9. A hotel is a building, or part thereof, intended, designed or used for supplying food and shelter to residents or guests, and having a general public dining room or cafe, or both, and containing more than fifteen guests' rooms.

(Office Buildings, Definition of.)

Sec. 10. An office building is a building divided into rooms above the first story, and intended and used for office purposes, and no part of which shall be used for living purposes, except by the janitor and his family.

(Lodging House, Definition of.)

Sec. 11. A lodging house is a building containing more than fifteen rooms in which persons are or may be accommodated, with sleeping apartments for hire by the day, week or month.

PART I.

WOOD FRAME BUILDINGS.

(Further Sections Applicable to These Buildings Are in Part II.)

(Wood Frame Buildings.)

Sec. 12. A wood frame building is a building or structure whose exterior walls, or a portion thereof, are constructed of wood. Buildings sheathed with boards, and partially or entirely covered with four inches of brickwork, shall be deemed frame buildings. Wood frames covered with metal shall be deemed to be wood structures.

No wood frame building, now erected within the fire limits shall be enlarged or built upon.

No wood frame building, now erected within the fire limits shall be repaired without a permit from the Board of Public Works.

(Height of Same.)

Sec. 13. Wood frame buildings shall be limited to a height of fifty (50) feet. All spires of churches and towers of breweries which are higher than fifty (50) feet, shall have such parts as are higher covered with fireproof materials.

(Walls.)

Sec. 14. The walls of wood frame buildings shall be constructed with studding, covered with weather boarding on the outside. No uncovered studding will be allowed against the wall of an adjoining building or structure.

(Brick or Stone Veneer.)

Sec. 15. The outer walls of wood frame buildings over one story in height, veneered with brick or stone, shall be at least eight (8) inches in thickness, including veneer and studding. No building shall be veneered with brick over three (3) stories in height. Veneered walls must be anchored every three (3) feet in height to the inside studding.

(Thickness of Foundation Walls for Frame Buildings.)

Sec. 16. Brick or concrete foundations

for wood frame buildings, one and two stories in height, used as dwellings, must not be less than eight (8) inches thick, and not over four (4) feet high. When the foundations are more than four (4) feet high they must not be less than thirteen (13) inches thick.

Foundations for three-story wood frame buildings shall not be less than thirteen (13) inches thick, and for buildings over three stories, the foundation shall not be less than seventeen (17) inches thick.

When foundation walls of wood frame buildings are used for embankment or retaining wall, one, two and three-story buildings with basement shall have foundation or basement walls of brick or concrete not less than thirteen (13) inches thick, and not higher than eight (8) feet from top of top footing to bottom of first floor joists (first tier of joists).

If a deeper basement be desired the walls thereof shall be not less than seventeen (17) inches thick; the bottom or footing of said walls shall not be higher than ten (10) feet from top of top footing to under side of first story floor joists, and the footing shall have a spread of one-half ($\frac{1}{2}$) the thickness of the wall resting on it.

All buildings over four (4) stories in height shall have foundation or basement walls of brick or concrete not less than twenty-one (21) inches thick, and shall not be more than twelve (12) feet high from top of top footing to bottom of first story floor joists; footings shall have a spread of one-half ($\frac{1}{2}$) the thickness of the wall resting on it.

Where it is not allowable to have footings on the outside of a foundation or basement wall, the footings must extend far enough on the inside to make them the required width.

(Size of Studding for Exterior Walls.)

Sec. 17. For a building of two stories or less in height, except factories, mills or warehouses, the studding for the outside walls and bearing partitions shall not be less than 2x4 inches; for a building of three stories in height, the studding shall not be less than 3x4 inches, to the bottom of the upper floor joists, and 2x4 inches for the remaining height; for a building

of four stories in height, the studding shall not be less than 3x6 inches for the first story, and 2x6 or 3x4 inches for the second and third story, and 2x4 inches for the fourth story.

Where the bearing partitions are less than twelve (12) feet apart, the studding may be less than the outside walls, but never less than 2x4 inches. Partitions dividing several stairways and sliding doors may by permission of Board of Public Works be less than 2x4 inches.

Studding on the exterior and interior walls of buildings shall not be placed more than sixteen (16) inches from centers.

The underpinning of buildings shall be one (1) inch thicker than the studding of the story immediately above, and said studding shall not be placed more than sixteen (16) inches from centers.

(Dividing Partitions.)

Sec. 18. All dividing partitions between buildings shall be close boarded with red-wood from the lower floors to the ground, and from the upper ceilings close to the under side of the roof boarding, so as to effectually check all connection from one building to another. Where a large building is divided into tenements, the boarding shall be applied on each dividing partition. The distance between dividing partitions shall not exceed twenty-five (25) feet.

(Framing.)

Sec. 19. When stories are framed separately, each tier of studding must have top and bottom plates, and the top plates must be doubled; when stories are not framed separately, proper bridging must be placed behind the ribbon at the ceiling line and on top of the joist at the floor line. Bridging must be two inches thick and of the full width of the studding in every case.

All wood beams or joists shall be trimmed away at least one and one-half (1½) inches from all flues and chimneys, whether the same be a smoke, air or any other kind of chimney or flue.

The trimmer beam shall be not less than eight (8) inches from the inside face of a flue, and four (4) inches from the outside of a chimney breast, and the header beam must be not less than two (2) inches from

the outside face of the brick or stone work of the same, except that for the smoke flues of boilers and furnaces where the brick work is required to be eight (8) inches in thickness the trimmer shall be not less than twelve (12) inches from the inside of flue.

(Bridging.)

Sec. 20. All stud walls, or partitions hereafter built, altered or repaired, shall have one row of bridging for every seven feet in height over the first seven feet. Said bridging shall in all cases extend to the lathing or sheathing, so as to prevent the passage of fire and smoke, and shall be the same thickness as the studding. All outside walls and cross partitions shall be thoroughly and angle braced; all joists shall have solid end blocking. All buildings over twenty-five (25) feet in width shall have a row of solid blocking over girder or partition of stairways. A row of cross bridging at least two (2) inches thick must be placed between the floor joists at least every twelve (12) feet.

(Furring.)

Sec. 21. When a chimney breast is furred out, the space between the chimney and the breast shall be so built that the passage of fire and smoke shall be intercepted, and wherever cove ceilings are used they shall be solid blocked behind on the studding at the spring of the cove.

(Bay Windows Constructed in Frame Buildings.)

Sec. 22. Bay, oriel or swell windows constructed in frame buildings shall have spaces of not less than five (5) feet in width between them, measured on outside of building clear of finish; provided, that in buildings built on lots having a frontage of twenty-five (25) feet or less, the space between said bay, oriel or swell windows may be decreased, provided the studding in said space shall be increased in thickness so as to contain the same amount of lumber as would be contained in the studding of the piers in the aforesaid spaces of five (5) feet, but the spaces shall be at least two (2) feet six (6) inches between bays in any case.

Such windows may project not more than three (3) feet over the street line, measured to the finish; they must not be more than ten (10) feet wide, measured from end to end, and the finish of their soffits must be at least ten (10) feet above the sidewalk.

(Frame Factories Not Over Two (2) Stories High.)

Sec. 23. Sub. A. The exterior and bearing walls of frame buildings used as factories, two stories high or less (height of building limited to thirty-five (35) feet) shall be built of 2x6 studs, sixteen (16) inches from centers.

(Frame Factories Over Two (2) Stories High.)

Sub. B. All frame buildings more than two stories high hereafter erected or enlarged, to be used as factories shall be constructed as follows: (a) The weights of all the floors shall be concentrated at certain points, and no support shall rest directly upon a stud wall, but all beams, girders, and girders supporting floors shall rest directly on posts.

(b) Said beams and girders, supporting floors shall not be more than nine (9) feet apart; upon these shall rest the floor, which shall extend from one girder or beam to another, and shall be not less than three (3) inches thick.

(c) Planks shall be laid to the ends of the timbers.

(d) Roof. The roof shall be covered with incombustible materials, as described for buildings within fire limits, Classes B and C.

(e) Studs. The filling between posts and walls shall be built of not less than 2x4-inch studs.

WOOD FRAME BUILDINGS IN FIRE LIMITS.

(Sheds.)

Sec. 24. Sheds erected within the fire limits shall be either constructed of fireproof material, or the framework thereof must be entirely covered with fireproof material on the outside, and said sheds shall not exceed twenty (20) feet in height; they shall be inclosed only on

one side, and erected on the ground.

Sec. 25. Temporary inclosed wooden sheds, not to exceed twenty (20) feet in height, may be erected within the fire limits to facilitate the erection of buildings in course of construction; when said buildings are completed the sheds must be removed.

(Privies or Water Closets.)

Sec. 26. Privies or water closets of wood, within the fire limits, shall not exceed ten (10) feet in height from floor to ceiling. For a hotel or lodging house, they shall not have more than fifty superficial feet of floor room, and for all other buildings they shall not have more than twenty-five superficial feet of floor room. The roof and the framework shall be covered with fireproof material, and they must not be placed higher than the fourth story of any building, nor project over the line of any street, lane, alley or place, and they shall not be used for any other purpose.

(Raising or Lowering Frame Buildings to Grade.)

Sec. 27. Any frame building within the fire limits may be raised or lowered to the official grade of the street; provided that in case said building is to be raised, a brick or concrete basement or foundation of such dimensions as is required by Section 104 of this Ordinance shall be built under it up to the curb level.

PART II.

SECTIONS APPLICABLE TO BOTH WOOD AND OTHER BUILDINGS.

QUALITY OF MATERIALS.

(Brick.)

Sec. 28. The brick used in all buildings shall be good, hard, well-burnt brick.

When old bricks are used in any wall they shall be thoroughly cleaned before being used, and shall be whole and good, hard, well-burnt brick.

All materials must be of good quality and shall conform to legal, trade and manufacturers' standards.

(Sand.)

Sec. 29. The sand used for mortar in all buildings shall be clean, sharp grit sand, free from loam or dirt.

(Lime Mortar.)

Sec. 30. Lime mortar shall be made of one part lime and not more than five (5) parts of sand, measured. All lime used for mortar shall be thoroughly burnt, of good quality, and properly slaked before it is mixed with the sand.

(Cement Mortar.)

Sec. 31. Cement mortar shall be made of cement and sand in the proportion of one part of cement and not more than three parts of sand, and shall be used immediately after being mixed. The cement and sand are to be measured and thoroughly mixed before adding water.

(Cements.)

Sec. 32. All cements used in building operations shall be of good standard make, finely ground and free from lumps.

(Cement and Lime Mortar.)

Sec. 33. Cement and lime mortar, mixed, shall be made of one (1) part of cement to six (6) parts of lime mortar, measured in a box.

(Concrete.)

Sec. 34. Sub. 1. Concrete for foundations shall be made of at least one part of cement, two parts of sand and six parts of clean broken stone of such size as to pass in any way through a two-inch ring, or good clean gravel may be used in the same proportion as broken stone. The cement, sand and stone, or gravel, shall be measured and mixed in the manner prescribed for mortar. Concrete foundations, wherever used, must have forms of planks around them except against firm banks, and the concrete must be well rammed, in individual layers, not more than six (6) inches each in thickness. All concrete, when in place, shall be properly rammed until the water stands on the top of the mass of concrete, and allowed to set without being disturbed.

(Rock.)

Sub. 2. Broken stone, for concrete, used in making foundations, must be clean and free from dirt and dust.

(Sand.)

Sub. 3. Sand shall be free from loam and shall be otherwise clean and sharp.

(Lumber.)

Sec. 35. All structural lumber used in any building or structure shall be good and sound.

(Tests of Materials.)

Sec. 36. Material hereafter introduced in this market shall be subjected to such tests to determine its character and quality as the Board of Public Works shall direct; the tests shall be made under the supervision of said Board, or said Board may direct the architect or owner to file with them a certified copy of the results of such tests as it may direct to be made.

EXCAVATIONS AND FOUNDATIONS.

(Excavations.)

Sec. 37. All excavations for buildings shall be guarded and protected so as to prevent injury to life or limb.

(Bearing Capacity of Soil.)

Sec. 38. Where no test of the sustaining power of the soil is made, different soils, excluding mud, at the bottom of the footings, shall be deemed to safely sustain the following loads to the superficial foot, namely: Soft clay, one (1) ton per square foot; ordinary clay and sand together, in layers, wet and springy, two (2) tons per square foot; loam, clay or fine sand, firm and dry, three (3) tons per square foot; very firm, coarse sand, stiff gravel or hard clay, four (4) tons per square foot; or as otherwise determined by the Board of Public Works. Where a test is made of the sustaining power of the soil, the Board of Public Works shall be notified, so that they may be present in person, or by representatives. The record of the test shall be filed in the office of the Board of Public Works. When a doubt arises as to the safe sustaining power of the earth upon which a building is to be erected, the Board of Public Works may order borings to be made, or direct the sustaining power of the soil to be tested by the owner of the proposed building, at his own expense.

(Pressure Under Footings or Foundations.)

Sec. 39. The loads exerting pressure under the footings or foundations in buildings not more than three (3) stories in height shall be computed as follows: For warehouses and factories they shall be the full dead load and the full live load established by Section 141 of this Ordinance. In stores and buildings for light manufacturing purposes they shall be the full dead load and seventy-five (75) per cent of the live load established by Section 141 of this Ordinance.

In churches, schoolhouses and places of public amusement or assembly they shall be the full dead load and seventy-five (75) per cent of the live load established by Section 141 of this Ordinance.

In office buildings, hotels, dwellings, apartment houses, tenement houses, lodging houses and stables they shall be the full dead load and sixty (60) per cent of the live load established by Section 141 of this Ordinance.

Footings shall be so designed that the loads will be as nearly uniform as possible, and not in excess of the safe bearing capacity of the soil, as established by Section 38 of this Ordinance.

TIMBER DETAILS.

(Wood Beams, Joists, Girders and Partitions.)

Sec. 40. All wood beams, joists and other timbers in the party walls of every stone, brick or iron building shall be separated from the beam or timber entering in the opposite side of the wall by at least four (4) inches of solid mason work. All wood trimmer and header beams or joists shall be proportioned to carry with safety the loads they are intended to sustain. Every wood header or trimmer more than six (6) feet long, used in any building, shall be hung in stirrup-irons of suitable thickness for the size of the timbers. Every wood beam, or joist, except header and tail beams, shall rest at least four (4) inches on the wall, or upon a girder, as authorized by this Ordinance. The ends of all wood floor and

roof beams, where they rest on brick walls, shall be cut to a bevel of three (3) inches on their depth. In no case shall either end of a floor or roof beam be supported on stud partitions, except against a brick wall. All wood floors and wood roof beams shall be properly bridged with cross-bridging, and the distance between bridging, or between bridging and walls, shall not exceed eight (8) feet. Solid bridging not less than two (2) inches thick shall be placed between joists over all girders. All wood joists shall be trimmed away at least one and one-half ($1\frac{1}{2}$) inches from all flues and chimneys, whether the same be smoke, air or any other flues or chimneys. The trimmer beam shall be not less than eight (8) inches from the inside face of a flue and four (4) inches from the outside of a chimney breast, and the header beam not less than two (2) inches from the outside face of the brick or stone work of the same, except that for the smoke flues of boilers and furnaces where the brickwork is required to be eight (8) inches in thickness, the trimmer beam shall be not less than twelve (12) inches from the inside of the flue. The header beam, carrying the tail beams of a floor, and supporting the trimmer arch in front of a fireplace, shall be not less than twenty (20) inches from the chimney breast. The safe carrying capacity of wood beams for uniformly distributed loads shall be determined by multiplying twice the area, in square inches, by its depth, in inches, and dividing this product by the span of the beam, in feet. This result is to be multiplied by seventy for spruce and white pine, ninety for Douglas fir (Oregon pine), one hundred and twenty for oak and one hundred and forty for yellow pine. All girders and trusses shall have sufficient bearing on their supports, to insure stability, eight (8) inches being the minimum.

Cutting for piping or other purposes shall not be done so as to reduce the strength of the supporting parts below that required by the provisions of this ordinance.

All wood partitions shall have solid caps and sills and at least one row of

bridging not less than two (2) inches thick, and of the full width of the standing studding, and all solidly blocked behind the ribbon on the line of the spring of the cove, to effectually prevent the passage of fire or smoke. Bearing partitions shall have double plates.

Double studs shall be used on the sides and top of all openings, with heads and truss braces cut in and secured.

Flues of ranges, boilers and stoves in hotels, restaurants and boarding houses shall not be furred with wood, but shall be plastered directly on the brick or on metal lath in the story where the fires are located.

(Anchors and Straps for Wood Joists and Girders.)

Sec. 41. Girders, which support beams or joists, shall be anchored to the walls and fastened to each other by suitable iron straps. The ends of wood beams or joists resting upon girders shall be butted together end to end and strapped by wrought-iron straps of the same size, the same distance apart, and in the same beam as the wall anchors, and shall be fastened in the same manner as said wall anchors; or they may lap each other at least twelve (12) inches, and be well spiked together where lapped.

Each tier of beams, front and rear, opposite each pier, shall have hard wood anchor straps dovetailed into the beams diagonally, which straps shall cover at least four beams, and be one (1) inch thick and four (4) inches wide; but such anchor straps shall not be let in within four (4) feet of the center line of the beams, or wood straps may be nailed on the top of the beams and kept in place until the floors are being laid. Every pier and wall, front or rear, shall be well anchored to the beams of each story, with the same size anchors as are required for side walls, which anchors shall hook over the fourth beam. See Section 126.

(Wood Columns and Plates.)

Sec. 42. All timber columns shall be squared at the ends perpendicularly to their axes. All timber columns, except for one and two-story buildings, shall have timber or iron cap and base plates.

Additional iron cheek plates shall be

placed between the cap and base plates and bolted to the girders when required to transmit the loads with safety.

(Timber for Trusses.)

Sec. 43. When compression members of trusses are of timber they shall be strained in the direction of the fiber only. When timber is strained in tension it shall be strained in the direction of the fiber only.

(Attics to be Divided into Compartments.)

Sec. 44. Attics or the unfinished space between the ceiling and roof rafters of every building shall be divided into compartments or rooms in order to prevent the rapid progress of fire. Such compartments shall not have a floor area of more than twenty-five hundred (2500) square feet; provided, this section shall not apply to buildings of Class A.

(Dividing Compartments.)

Sec. 45. All dividing partitions between buildings shall be close boarded from the lower floors to the ground and from the upper ceilings close to the under side of the roof boarding. They shall be boarded with redwood so as to effectually check all connections from one to another. Where a large building is divided into tenements the boarding shall be applied to each dividing partition.

CHIMNEYS, FLUES AND FIREPLACES

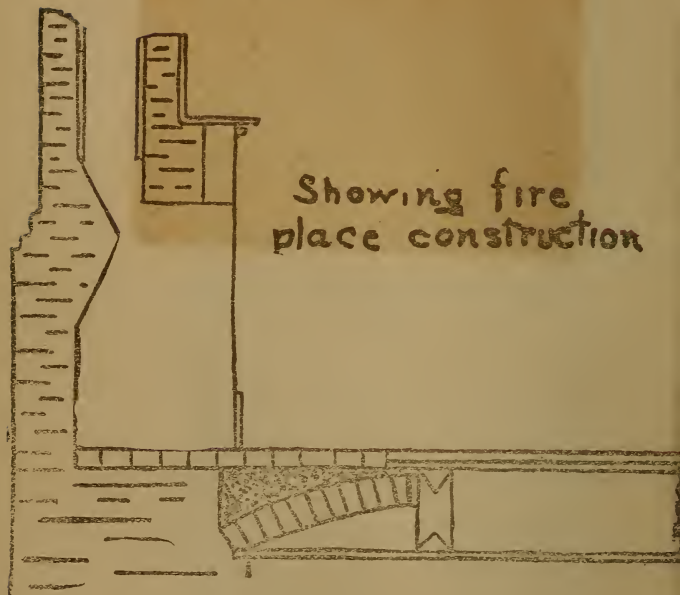
(Trimmer Arches.)

Sec. 46. All fireplaces and chimney breasts, where mantels are placed, whether intended for ordinary fireplace uses or not, shall have trimmer arches to support hearths, and the said arches shall be at least twenty (20) inches in width, measured from the face of the chimney breast, and they shall be constructed of brick, stone or burnt clay. The length of a trimmer arch shall not be less than the full width of the chimney hearth. Wood centers under trimmer arches shall be removed before plastering the ceiling underneath. If a heater is placed in a fireplace, the hearth shall be the full width of the heater. All fireplaces, in which heaters are placed, shall have incombustible man-

tels. Wood mantel or other woodwork shall not be exposed back of a summer place; the ironwork of the summer place shall be placed against the brick or stone work of the fireplace. Fireplaces shall not be closed with a wood fireboard.

(Hearths.)

Sec. 47. Hearths of open fireplaces shall be of brick or stone, and shall rest upon brick trimmer arches or other fireproof material, as shown by the following cut



ORDINANCE NO. 697.

AN ORDINANCE AMENDING SECTION 48 of an Ordinance Entitled "Ordinance No. 645, Regulating the Construction, Erection, Enlargement, Raising, Alteration, Repair and Use of Buildings," Approved February 5, 1903.

Be it ordained by the People of the City and County of San Francisco as follows:

Section 1. Section 48 of an ordinance entitled "Ordinance No. 645, regulating the construction, erection, enlargement, raising, alteration, repair and use of buildings," approved February 5, 1903, is hereby amended to read as follows:

Section 48. Gas grates or gas logs shall not be placed in any building elsewhere than in a fire place constructed in the manner prescribed in Section 46 or Section 54 of Ordinance No. 645.

And all gas grates or gas log fire places shall be connected with a brick or patent chimney; said brick or patent chimneys shall be erected and constructed in strict accordance with the provisions and requirements of the sections of Ordinance No. 645, which governs the erection and construction of brick and patent chimneys.

Gas grates or logs shall be placed so as to be within one (1) inch of any wood or other combustible material.

(Chimneys, Flues and Fireplaces.)

Sec. 49. Enclosing walls and division walls of all chimneys, except patent chimneys, as hereinafter provided, shall be not less than four (4) inches thick. Smoke flues of brick shall not be less than seven and one-half ($7\frac{1}{2}$) by seven and one-half ($7\frac{1}{2}$) inches in the clear, and such flue shall have but one (1) inlet; for a two (2) story building with two (2) inlets the flue shall be seven and one-half by eleven and one-half ($7\frac{1}{2} \times 11\frac{1}{2}$) inches in the clear, and for a three (3) story building with three (3) inlets the flue shall be seven and one-half by fifteen and one-half ($7\frac{1}{2} \times 15\frac{1}{2}$) inches in the clear. Flues in buildings of greater height shall be increased in size proportionately. Flues larger than two hundred (200) square inches and less than five hundred (500) square inches must be surrounded by walls of not less than eight (8) inches in thickness; flues larger than five hundred (500) and less than one thousand (1000)

square inches must be surrounded by walls of not less than twelve (12) inches in thickness up to a height of fifteen (15) feet above the inlet and eight (8) inches in thickness the remaining height; flues larger than one thousand (1000) square inches shall be proportionately increased in size, and shall be lined with firebrick for at least twenty (20) feet above the opening.

For bakeries, the oven flues shall be not less than eleven by eleven (11x11) inches in the clear, and such flues shall have the sides, back and front of brickwork not less than eight (8) inches in thickness.

Fireplaces, chimneys and flues of all description, without reference to the purpose for which they may be used, in all buildings, shall be lined on the inside with pipe. Parging mortar shall not be used on the inside of any fireplace, chimney or flue. The firebacks of all fireplaces hereafter erected shall be of solid masonry not less than eight (8) inches thick. When a grate is set in a fireplace, a lining of fire brick at least two (2) inches in thickness shall be added to the fireback, unless soapstone tile or cast iron is used, and filled solidly behind with fireproof material.

The inside four (4) inches of all boiler flues for boilers, exceeding twenty-five (25) horse-power shall be firebrick, laid in fire mortar, for a distance of twenty-five (25) feet in every direction from the source of heat. All smoke flues of smelting furnaces or of steam boilers, or other apparatus which heat the flues to a high temperature, shall be built with double walls of suitable thickness for the temperature with an air space between the walls; the inside four (4) inches of the flues shall be of fire brick. All smoke flues shall extend at least four (4) feet above a flat roof and at least two (2) feet above the ridge of a peak roof.

Any chimney flue larger than three hundred and fifty (350) square inches and less than five hundred (500) square inches shall be carried up to a height of eight (8) feet above any roof immediately surrounding, or five (5) feet above the highest part of any roof within the radius of fifty (50)

feet of said chimney.

Any chimney flue larger than five hundred (500) square inches and less than one thousand (1000) square inches shall be carried up to a height of ten (10) feet above the roofs immediately surrounding, or seven (7) feet above the highest part of the roof within a radius of fifty (50) feet of said chimney.

Every chimney which extends above the roof to a height equal to more than six (6) times its thickness, shall be properly anchored and secured.

On dwelling houses or stables three (3) stories or less in height, not less than six (6) of the top courses of a chimney shall be laid in cement mortar, and the brickwork shall be carefully bonded.

In all buildings hereafter erected every smoke or vent flue, except the flues hereinbefore mentioned, shall be lined on the inside with cast iron or well-burnt clay or terra cotta pipe made smooth on the inside. All stone or brick hot air flues and shafts shall be lined with tin galvanized iron or burnt clay pipes. Wood casing, furring or lath shall not be placed against or cover any smoke flue or metal pipe used to convey hot air or steam. Flue lining must start from the throat of a fireplace, or from the level of the floor of the story where a thimble is placed, and they must be carried up continuously to the top of the flue. The ends of all lining pipes must be made to fit close together, and each pipe must be set first and bricked around as the flue is carried up. Each smoke pipe shall be inclosed on all sides with not less than four (4) inches of brickwork, properly bonded together.

All flues shall be properly cleaned and all rubbish removed, and the flues left smooth on the inside upon the completion of the building.

All "pipe" shall be made of pure calcined clay not less than one (1) inch in thickness.

Pipes for gas logs shall enter only on sides and through brickwork.

(Chimney Supports.)

Sec. 50. No chimney, except a patent one, shall be built upon any floor or beam of wood.

Chimneys shall not be corbeled out more

than eight (8) inches from the wall and the corbeling shall consist of at least five (5) courses of brick, but in twelve (12) inch brick walls corbeling shall not exceed four (4) inches. Piers which support chimneys shall start from the foundation on the same face with the chimney breast and shall be not less than twelve (12) inches on the face and properly bonded into the walls. When a chimney is to be cut off below, in whole or in part, it shall be wholly supported by stone, brick, iron or steel. Chimneys which are dangerous in any manner whatever shall be repaired and made safe or taken down.

When a smoke pipe enters a brick chimney a thimble shall be used. All thimbles used shall be made of fire clay not less than one-half ($\frac{1}{2}$) inch in thickness, and shall have casings of galvanized iron one-half ($\frac{1}{2}$) inch larger than thimbles, or be bricked around with not less than four

(4) inches of brick work, brought out to face of thimbles.

Chimneys, built wholly outside of frame structures or in light wells thereof, shall be well anchored to the stud walls with wrought iron anchors or bands on the outside at intervals not exceeding ten (10) feet.

(Offsets.)

Sec. 51. Offsets for reducing the size of chimneys shall not be greater than one (1) inch to each course. All chimneys isolated from brick walls shall be so built as not to increase in size from the foundation up.

(Chimneys of Cupolas.)

Sec. 52. Iron cupola chimneys of foundations shall extend at least ten (10) feet above the highest point of any roof within a radius of fifty (50) feet of such cupola. No woodwork shall be placed within two (2) feet of the cupola.

Patent Flues and Chimneys.)

Sec. 53. Chimneys, hereafter erected, must be built of brick or stone (not concrete), or of patent chimney, for which a United States patent has been issued, and which has been approved in writing by the Board of Public Works. A permit, of

the Board of Public Works, to use patent chimney shall not be transferable, and it may be revoked for failure to erect the chimney as required by the patent, or in a workmanlike manner. The name of the patentee or builder, and the date of the letters patent must be stamped in a conspicuous place on each patent chimney.

All stove pipes, or terra cotta pipes, wherein fire is or may be used, which project through the roof or sides of any building, now erected, and for which a United States patent has not been issued, must be removed within thirty (30) days after the passage of this Ordinance.

All patent chimneys shall be built up from the floor on which they are used, and in no case shall a stovepipe enter the bottom of a patent chimney.

If a patent chimney be erected on the outside of a building it shall rest on a substantial iron bracket. If supported by brackets the brackets must be of metal and fastened to studding with bolts and nuts; screws or lag screws shall not be allowed. When erected on the inside of a building it shall rest on an iron plate not less than one-quarter ($\frac{1}{4}$) of an inch in thickness and not less than eight (8) inches of brickwork on top of said iron plate, and shall have a smoke proof opening near the bottom for cleaning it. All patent chimneys shall be braced every four (4) feet of their height. All joints must be cemented and the bands covering the joints shall be made of the best No. 24 iron and filled with cement to make them smoke and spark proof.

All galvanized iron used for the outside covering of patent chimneys shall be of the best No. 24 iron, riveted together with rivets not more than three (3) inches apart, or may be seamed and top and bottom of seams secured by a rivet, and shall be ventilated with eight (8) holes not less than one (1) inch in diameter, said holes to be made close to the top of chimney above the roof, so as to permit the escape of hot air; there shall be a space of not less than one (1) inch between the clay pipe and the iron covering. No patent chimney shall be less than one and one-half ($1\frac{1}{2}$) inches from all woodwork, and the opening in the roof and at each floor and cell-

ing through which it passes shall be closed with an iron plate or other fire-proof material, so as to prevent the passage of fire and smoke. Patent chimneys shall not be fastened to the laths or the siding of the building, but shall be securely fastened to the studding or cross pieces with good iron straps, and in no case shall any patent chimney be suspended from any roof timber or floor beam.

No patent chimney shall have more than one (1) inlet. All pipe used for patent chimneys shall be composed of pure calcined clay, not less than one (1) inch in thickness, and shall have the name of the manufacturer stamped into each piece. Patent chimneys built on the inside of a house shall have an opening in the partition enclosing the chimney to permit of the cleaning of the same.

(Patent Fireplaces.)

Sec. 54. All fireplaces connected with patent chimneys or gas logs must be set on an iron plate not less than one-quarter ($\frac{1}{4}$) of an inch in thickness and not less than three (3) feet nine (9) inches in length by three (3) feet in width, which shall be free from all holes; boards shall not be placed under the iron plate, which must rest on the floor joists. On top of the iron plate there shall be one (1) inch of concrete or cement, then a course of brick, followed by the tiling or marble; the strength of the floor must not be impaired by the cutting out for the fireplace. In lieu of resting on the floor joists, said iron plate may be suspended by wrought iron stirrups of sufficient strength to sustain the fireplace and patent chimney.

The brick jambs of every fireplace or grate opening shall be at least eight (8) inches wide and the backs shall not be less than eight (8) inches thick; and where fireplaces come over one another, on separate floors, the jamb of the lower fireplace shall be wide enough to carry the patent chimney far enough to one side of the jamb above so that the patent chimney will pass the upper fireplace in as straight line as possible. Where bends are necessary in patent chimneys offsets shall be used; said offsets shall be made solid and without joints.

The inside dimensions of patent chim-

neys shall be as follows:

For fireplace flues, 18 inch openings, 6 inch.

For fireplace flues, 21 inch openings, 7 inch.

For fireplace flues, 24 inch openings, 8 inch.

For ordinary stove flues, 6 inch.

For French range flues, 8 inch.

For steel range flues, 8 inch.

For furnace flues. 8 or 10 inch.

(Smoke Pipes.)

Sec. 55. No smoke pipe, stove pipe, terra cotta pipe, earthen pipe or other smoke flue, except as provided in Section 53 of this Ordinance, shall project through any external wall or window, or through the roof or any skylight of any building; and no smoke flue shall pass through any wooden partition of any building unless there is a ventilated air space at least four inches around the pipe. Any smoke pipe passing through the floor or floors of any building shall be protected by a metal casing extending from the ceiling to at least one (1) foot above the floor, and there shall be a ventilated air space of at least four (4) inches around the said pipe.

(Stovepipes and Chimneys—Duty of Board of Public Works.)

Sec. 56. It shall be the duty of the Board of Public Works to cause every chimney, except as provided in Section 53 of this Ordinance, to be carried up at least four (4) feet above the extreme height of the building to which it is attached; and should the Board of Public Works deem any chimney unsafe to the building or buildings adjoining they shall order the same to be carried four (4) feet above the extreme top of said adjoining building or buildings; and, if in the opinion of the Board of Public Works a galvanized iron pipe is not sufficient for the safety of the building or buildings, they shall inform the owner or owners, or the person having control thereof and order a brick or terra cotta chimney to be erected in lieu thereof within ten (10) days after such order.

(Fire Openings.)

Sec. 57. Open fireplaces shall have arched heads, which shall, wherever pos-

sible, extend to the back of the tile or marble facing.

HEATING FURNACES, PIPES, ETC.

(Heating Furnaces.)

Sec. 58. The top of all heating furnaces, set in brick, shall be covered with brick supported by iron bars so constructed as to be perfectly tight; said covering shall be in addition to and not less than six (6) inches from the ordinary covering of the hot-air chamber. Smoke pipes and furnaces not set in brick shall be at least two (2) feet from any woodwork. If said smoke pipes and furnaces are less than two (2) feet from any woodwork, said woodwork must be protected by sheets of tin plate in such manner that an air space of at least two (2) inches will be formed between the woodwork and the tin plate which shall extend one (1) foot beyond the furnace on all sides.

(Fireproof Room for Heaters.)

Sec. 59. Every steam boiler or furnace in any building used for either stores, offices, mechanical or manufacturing purposes, or in hotels, lodging or tenement houses, theaters or assembly halls, or places of public entertainments, shall be inclosed in a fireproof room of brick, terra cotta, iron or other incombustible materials. All doors leading into such rooms shall be covered on insides with metal, and shall be hung to rabbeted iron frames or iron hinges set in brick.

(Hot Air Boxes.)

Sec. 60. All hot-air boxes hereafter placed in the floors or partitions of buildings, except when such are entirely of incombustible material, shall be made of double pipes of tin plate, which shall be not less than half an inch apart, and set in soapstone or equally fireproof borders not less than two (2) inches in width, to which the pipes shall be tightly joined by inserting the same into a groove, or the pipes and boxes shall be covered with asbestos one-sixteenth (1-16) of an inch in thickness cemented thereon.

Hot-air boxes or pipes less than ten by twelve (10x12) inches in size shall be kept at least half an inch from

any woodwork; those of greater size shall be kept at least one (1) inch from any woodwork. No woodwork shall be placed within one (1) inch of any metal pipe intended to convey steam or heated air, unless such pipe is protected by a casing of metal, soapstone or earthen ring; provided, that no covering, except it be of incombustible material, shall be placed within one (1) inch of the outer surface of any steam pipe.

(Erection of Furnaces, Boilers, Etc.)

Sec. 61. Boilers exceeding ten (10) horse-power, used for generating steam for heating or motive power, and large furnaces, shall not be placed on any floor above the cellar of any building, unless the same is set on metal beams and arches, and such beams shall be built into the walls. All steam boilers shall be provided with a tank or other receptacle of sufficient capacity to at least hold a sufficient supply of water to last six hours.

Whenever steam boilers, large cooking ranges, furnaces, ovens, coffee roasters, candy kettles, and laundry stoves set in brick or other structures in which fires are maintained, are set or kept on any wooden floor, such floor shall be protected by not less than two (2) inches of brick laid with air spaces, or with not less than two (2) inches of hollow tiles, upon either of which shall rest a continuous sheet-metal bearing plate not less than three-sixteenths (3-16) of an inch in thickness, all the joints of which shall be securely riveted; the top of said plate shall be covered with not less than five (5) inches of brick or concrete.

The backs of all ranges or kettles, set in brick, built against any frame partition, or against any brick wall, upon which there is any wooden furring or laths or sheathing, shall be extended with brick or hollow tiles to a height of two (2) feet above the top of such range or kettle.

This section shall apply to all buildings in the City and County of San Francisco.

(Registers.)

Sec. 62. Registers located over a brick furnace shall be supported by a brick

shaft built up from the cover of the hot air chamber; said shaft shall be lined with a metal pipe, and all wood beams shall be trimmed away not less than four inches from it. Where a register is placed on any woodwork in connection with a metal pipe or duct, the end of said pipe or duct shall be flanged over on the woodwork under it. All registers for hot-air furnaces placed in any woodwork or combustible floors shall have stone or iron borders firmly set in plaster of paris or gauged mortar. All register boxes shall be made of tin plate or galvanized iron with a flange on the top to fit the groove in the frame, and the register must rest upon the same; there shall be an open space of two inches on all sides of the register box, extending from the under side of the border through the ceiling below. The said opening shall be fitted with a tight tin or galvanized iron casing, the upper end of which shall be turned under the frame. When a register box is placed in the floor over a portable furnace, the open space on all sides of the register box shall be not less than three (3) inches. When only one register is connected with a furnace said register shall have no valve.

(Drying Rooms.)

Sec. 63. Dry rooms, dry boxes, and all enclosures used for drying by artificial heat, must be plastered upon metal lathing and have the floor or bottom covered with incombustible material, or in lieu thereof may be lined throughout with tin and asbestos not less than one-eighth ($\frac{1}{8}$) of an inch in thickness, or other approved incombustible material.

If such dry rooms, dry boxes or enclosures used for drying contain steam or other heated pipes, stoves or other heaters, so arranged as to permit inflammable material to come in contact therewith, a metal netting of sufficient fineness must be so placed as to prevent such contact.

(Steam and Hot Water Heating Pipes.)

Sec. 64. Steam or hot water heating pipes shall not be placed within two (2) inches of any timber or woodwork, unless the timber or woodwork is protected by a metal shield; then the distance shall be not less than one (1) inch. All steam or hot

water heating pipes passing through floors and ceilings or lath and plastered partitions shall be protected by a metal tube, one (1) inch larger in diameter than the pipe, having a metal cap at the floor; and where they run in a horizontal direction between the floor and ceiling, a metal shield shall be placed on the under side of the floor over them, and on the sides of beams running parallel with said pipe.

All wood boxes or casings inclosing steam or hot water heating pipes and all wood covers to recesses in walls in which steam or hot water heating pipes are placed, shall be lined with metal.

All pipes or ducts, used to convey air warmed by steam or hot water, shall be made of metal or other fireproof material. All steam and hot water pipe coverings shall consist of fireproof materials only.

(Ranges and Stoves.)

Sec. 65. The backs of all ranges, candy furnaces and kettles, if set in brick and built against any frame partition, shall be not less than eight (8) inches thick, and shall be extended with brick or hollow tile not less than two (2) inches thick to a height of two (2) feet above the top of the furnaces or kettles.

In no case shall any range, candy furnace or kettle, set in brick be built against a brick wall with any combustible material between it and said wall, or upon said wall, for a height of two (2) feet above the top of such range, candy furnaces or kettle.

All wood and lath and plaster or wooden ceilings over all ranges in hotels, restaurants and boarding houses shall be guarded by metal hoods placed at least nine (9) inches below the ceiling or shall be metal lined on walls and ceiling back of and above the range. All ventilating pipes, connected with the hood over a range, shall be at least nine (9) inches from any wood, lath and plaster, or combustible material, or such pipes shall be covered with one (1) inch of asbestos plaster on wire mesh, and shall not pass through any floor.

Stoves shall be kept twenty (20) inches, and their smoke pipes twelve (12) inches, from any wood lath and plaster or woodwork, or shall be protected with

a metal shield arranged with at least one (1) inch air space behind such shield.

All low portable gas stoves or heaters shall be placed on iron stands or other incombustible bases, or the burners shall be at least six (6) inches above the base of the stove and metal guard plates placed four (4) inches below the burners; all woodwork under them shall be covered with metal or other incombustible material.

(See Section 61 for setting of ranges, candy furnaces, etc., on floor.)

(Notice as to Heating Apparatus.)

Sec. 66. In cases where hot water, steam, hot air or other heating plants are to be hereafter placed in any building, or flues or fireplaces are to be changed or enlarged, due notice shall first be given to the Board of Public Works, by the person or persons placing the said plants in said building, or by the contractor or superintendent of said work.

CORNICES, BELTS, GUTTERS AND OTHER APPENDAGES.

Sec. 67. All exterior cornices, belts, gutters and other appendages on buildings within the fire limits shall be constructed of, or covered entirely with, fireproof material.

All metal cornices shall be riveted and well secured to iron brackets not more than two (2) feet apart and properly built into the wall.

Cornices of stone, brick or other masonry shall be properly supported on, and well secured to, the wall, and the greatest weight of material of such cornices shall be on the inside of the face of the wall.

All the wooden cornices and gutters, on buildings within the fire limits, hereafter repaired, altered, replaced or changed, shall be constructed of, or covered with, fireproof material, and all bulkheads, including the bulkheads used as inclosures for elevators and machinery of elevators, and all structures hereafter constructed or altered upon roofs, and of greater height than that prescribed by this Ordinance for frame buildings, shall be covered with metal lath and plaster on

the inside, and covered on all outside surfaces with metal, including both surfaces and edges of doors.

All such buildings shall have scuttles or bulkheads covered with some fireproof material, with ladders or stairs leading thereto and easily accessible to all occupants. Scuttles shall not be less than two by three (2x3) feet in size.

SKYLIGHTS AND SHAFTS.

(Skylights.)

Sec. 68. All skylights, on roofs projecting at an angle less than $22\frac{1}{2}$ degrees, not inclosed by a substantial railing at least three (3) feet high, shall be protected by screens of No. 10 wire with meshes not more than one and one-half ($1\frac{1}{2}$) inches square. The screens must be secured to the sash and must be kept at least four (4) inches above the glass.

Wire rolled glass may be used, in which case the wire netting may be omitted.

(Light and Vent Shafts.)

Sec. 69. In every building of Class "B" or "C" hereafter erected or altered, all the walls or partitions forming interior light or vent shafts shall be built of brick or other fireproof materials. The walls of all light or vent shafts, whether exterior or interior, hereafter erected, shall be carried up at least three (3) feet above the level of the roof, and the brick walls shall be coped like other parapet walls.

Stud walls of light shafts and vent shafts shall be lined on both sides of studs with fireproof material. Light shafts are inclosed structures passing through the floor or floors, for the purpose of admitting light or air; or an open space, within a building, entirely surrounded with walls.

All openings in light shafts shall have metal or metal covered frames and sashes; sashes shall be glazed with wire-rolled glass not less than three-sixteenth (3-16) inch in thickness.

All walls and ceilings within ten (10) feet of openings in floors, except those necessary to admit stairways, shall either be constructed of fireproof material or entirely covered with metal lath and plas-

ter three-fourths ($\frac{3}{4}$) of an inch thick. The well face must not be covered with wood; but doors, sashes and trim may be of wood.

FLOOR LIGHTS.

Sec. 70. Floor lights, used for transmission of light to floors below, shall be constructed of metal frames and bars or plates, and if any glass therein measures more than sixteen (16) square inches, the glass shall be provided with a mesh of wire either in the glass or under the same, and the floor lights shall be of the same proportional strength as the floors in which they are placed.

SCUTTLES AND LADDERS.

Sec. 71. All brick, stone, iron or frame buildings over twenty-five (25) feet high shall have permanent means of access to the roof from the inside. The openings in the roof shall not be less than eighteen by thirty (18x30) inches. And when ladders are placed on the exterior of any building in the City and County of San Francisco they shall be constructed of metal and bolted through the walls of said building at each story, with not less than five-eighths ($\frac{5}{8}$) bolts, with the nut and washers to show on the outside of the building. Said ladders shall be placed not less than six (6) inches from wall of buildings and shall extend at least two (2) feet above fire wall or roof of buildings and shall be securely fastened at top.

Size of metal for ladders, two inches by three-eighths ($2 \times \frac{3}{8}$) inches.

Size of rungs for ladders, three-quarters ($\frac{3}{4}$) of an inch in diameter.

The braces carrying ladders shall be one and one-half inches by one-half ($1\frac{1}{2} \times \frac{1}{2}$) inch, bolted through the building.

Where the ladders join they shall be connected and bolted with not less than four bolts on each side.

Screws or lag screws shall not be used in the construction of said ladders.

In frame buildings, where the studding does not correspond with the measurements for ladders, extra headers shall be inserted between the studding, of the

same thickness as the studding, and securely spiked.

(Engineers' Stationary Ladders.)

Sec. 72. Every building in which boilers are placed in the cellar or lowest story shall have stationary iron ladders or stairs from such story leading directly to a manhole in the sidewalk, or to inside exits.

ROOFS, ETC.

(Leaders.)

Sec. 73. All buildings shall be kept provided with proper metallic leaders for conducting water from the roofs, in such manner as shall protect the walls and foundations of said buildings from injury. In no case shall the water from the said leaders be allowed to flow upon the sidewalk, but the same shall be conducted by pipe or pipes to the sewer. If there be no sewer in the street upon which said buildings front, then the water from said leader shall be conducted by proper pipe or pipes below the surface of the sidewalk to the street gutter.

(Roof Covering.)

Sec. 74. Sub. 1. The roofs of all buildings hereafter erected within the fire limits, and the roofs of all brick and stone buildings hereafter erected within the City and County, shall be covered with either metal, slate, tiles, terra cotta or asphaltum; provided, however, that said asphaltum shall be first laid over five plys of felt, well cemented together, and then covered with at least three-quarters ($\frac{3}{4}$) of an inch of gravel embedded in said asphaltum, passed through a screen whose meshes shall not exceed one-half ($\frac{1}{2}$) inch and rejected by a No. 6 screen.

Sub. 2. Whenever the roof or roofs of any building or buildings within the fire limits shall (in the judgment of the Board of Public Works) be or become damaged to the extent of 40 per cent of the value of said roof or roofs, then said roof or roofs shall be covered as provided in subdivision 1 of this section.

Sub. 3. The supports, rafters and all

parts of roofs, within the fire limits, rising at any point to a height of more than twenty (20) feet from the top of the masonry walls, or to a height greater than that provided in Section 98, shall be constructed of fireproof material.

Sub. 4. No temporary staging of any kind, nor stand for observation purposes, shall be constructed of wood upon the roof of any building.

(Mansard Stories Within Fire Limits.)

Sec. 75. All mansard stories within the fire limits shall be constructed of fireproof materials; wooden partitions and rafters may be used, provided the whole of said story of the interior is metal lathed and plastered, and covered with metal, slate or tile on the exterior; but if erected on any building of greater height than that allowed in Section 98 they shall be constructed of iron rafters, with iron or steel on the inside and plastered, or filled in with fireproof material, not less than three (3) inches thick, and covered with metal, slate or tile.

ELEVATORS, HOISTS AND DUMB WAITERS.

(Elevator Shafts and Hatchways.)

Sec. 76. Open elevators or elevators without fireproof inclosures may be used in buildings of Class "A"; they may also be used in buildings of Classes "B" and "C," provided they are located and operated in well-holes of fireproof staircases (oak treads may be used); provided the staircase is entirely surrounded by walls, either of fireproof material or of studding covered on both sides with metal lath and plastering. They may also be used in buildings of Class "B," provided they are placed separately and away from staircases.

Open elevators may be used in all buildings, provided they do not pass the ceilings of the first story.

(Elevators, etc., to be Enclosed.)

Sec. 77. Elevators, hoists, dumb waiters and lifts, and all openings or shafts passing through the floor or floors, in all other buildings and under all other conditions,

shall be enclosed by walls of non-combustible material, or of studding covered on both sides with iron, or with metal lath and plastering, not less than three-quarters ($\frac{3}{4}$) of an inch in thickness.

Buildings occupied or used entirely for manufacturing or mercantile purposes may have a hanging inclosure around said openings, to extend downward at least three (3) feet and covered with metal on both sides from soffit of the hanging inclosure to the top of the floor above, and with trap doors, covered with metal on the under side, at each story.

(Tops of Shafts.)

Sec. 78. If the shafts of said elevators, hoists, dumb waiters and lifts pass the upper floor of any building, they shall be carried through and at least eighteen (18) inches above the lowest point of the roof adjacent, and they must be covered with a skylight; if they do not pass the upper floor, their tops shall be covered with some non-combustible material.

(Windows and Doors in Elevator Shafts.)

Sec. 79. The inside faces of all doors opening into elevator shafts shall be covered with metal. The upper panel of any such door may be a grille. Windows shall not exceed one for each floor, nor shall any window have a greater area than twenty-four (24) square feet, except where said openings are in exterior walls and face a street, when they may, by permission of the Board of Public Works, be made larger. The frames, sashes and all woodwork shall be covered with metal. Sashes shall be glazed with glass three-sixteenths ($\frac{3}{16}$) of an inch in thickness.

(Ropes and Gearing.)

Sec. 80. The strength of the ropes, gearing and all other portions of the mechanism of passenger elevators shall be calculated with a factor of safety of twenty.

For all other elevators ten is to be used as the factor of safety.

The main suspension ropes or cables of all elevators used for passengers or freight must be of non-combustible material.

(Safety Appliances.)

Sec. 81. Every elevator shall be provided with an approved device for preventing the car from falling in case of accident.

(Openings in Shafts.)

Sec. 82. All freight elevator shafts must be provided, at each floor through which they pass, with the latest and best appliance, style and design of automatic opening and closing safety gates.

Doors opening into passenger elevator shafts shall be entirely under the control of the operator, and shall be so arranged that they can be opened from the inside.

This section shall apply to any and all buildings hereafter erected, altered or changed.

(Wire Screens.)

Sec. 83. Elevator cabs shall be so covered by wire screens as to protect them from falling machinery. Every part of the elevator not inclosed in a shaft shall be protected by a metal grill.

(Sidewalk Elevators.)

Sec. 84. The doors of all sidewalk elevators must be opened by hand from the outside. When such doors are locked from the inside, they shall be provided with some mechanical device which will not require any person locking or unlocking them to ride on the elevator for such purpose.

FIRE ESCAPES AND STANDPIPES.

(Fire Escapes and Stand Pipes.)

Sec. 85. For the proper and necessary protection of life and property, all buildings hereinafter designated in this section and Ordinance, that are already erected and built, or that may hereafter be erected and built, in this city and county, shall be provided and equipped with fire escapes and stand pipes as follows:

Every building, that is occupied or so constructed as to be occupied by two or more families on the third story, not having proper or sufficient exits, or facilities for escape in case of fire, and every building of four or more stories in height, and every building used or occupied or so con-

structed as to be used or occupied as a theater, hospital, asylum, seminary, academy, college, hotel, rooming house, apartment house, tenement house, lodging house, or for a factory, mill or manufactory, or for offices, workshop, or public entertainments or assemblages, above the second story, and every school building of more than two stories in height, shall be provided and equipped with metallic fire escapes, combined with suitable metallic balconies, platforms and railings firmly secured to the outer walls, and erected and arranged in such a way, and in such proximity to one or more windows, or to as many windows of each story above the first, as may be necessary to make and render said fire escapes readily accessible, safe and adequate for the escape of the inmates in case of fire.

Said fire escapes shall extend from the level of the ceiling of the first story to and over the roof, and shall be either of two kinds, viz.: Vertical metallic ladder fire escapes, or metallic stair fire escapes. The Board of Public Works, after consultation with the Fire Wardens, shall determine the kind, construction, location and number of the fire escapes necessary and adequate on all such buildings to make the means of escape therefrom easy and safe to the inmates in case of fire.

All fire escapes shall be erected and built as required by the provisions of Section 87 of this Ordinance, and shall at all times be kept in good order and repair and free from any and all obstructions.

Every building of four stories in height shall have, outside of the exterior walls, one or more metallic standpipes at least four (4) inches in diameter, which shall extend from four feet above the sidewalk, to and over the roof, and rest on the fire walls; and at each story there shall be branches with two and one-half ($2\frac{1}{2}$) inch gate valves; and there shall be a two-way siamese inlet attached to each standpipe four (4) feet above the line of the sidewalk; and an outlet over the roof, with two three (3) inch gate valves with reducers from three (3) inches to two and one-half ($2\frac{1}{2}$) inches, provided with cap and chain.

Every building of five stories in height shall have, outside of the exterior walls,

one or more metallic standpipes, at least four (4) inches in diameter, which shall extend from four (4) feet above the sidewalk, to and over the roof, and rest on the fire walls; and at each story there shall be branches with two and one-half ($2\frac{1}{2}$) inch gate valves; and there shall be a three-way siamese inlet, attached to each standpipe four (4) feet above the line of the sidewalk; and a two-way outlet on the roof, with three (3) inch gate valves with reducers from three (3) inches to two and one-half ($2\frac{1}{2}$) inches, provided with cap and chain.

Every building of six and seven stories in height shall have, outside of the exterior walls, one or more metallic standpipes at least five (5) inches in diameter, which shall have a four-way siamese inlet attached thereto, four (4) feet above the line of the sidewalk, and at each story there shall be a three (3) inch gate valve, with reducers of two and one-half ($2\frac{1}{2}$) inches, provided with cap and chain; there shall be an outlet at the end of each standpipe over the roof; it shall be connected with a three-way siamese, having three (3) three-inch gate valves, with reducers to two and one-half ($2\frac{1}{2}$) inches, provided with cap and chain; all connections for inlets shall be not less than three (3) inches in diameter.

Every building from eight to and including fourteen stories in height, shall have, on the inside of the exterior walls, one or more metallic standpipes at least six (6) inches in diameter, which shall have a four-way siamese inlet attached thereto four (4) feet above the line of the sidewalk; and at each story there shall be a three (3) inch gate valve, with reducers to two and one half ($2\frac{1}{2}$) inches, provided with cap and chain; there shall be an outlet at the end of each standpipe, over the roof, which shall be connected with a three-way siamese, having three (3) three-inch gate valves, with reducers to two and one-half ($2\frac{1}{2}$) inches, provided with cap and chain; all connections for inlets and outlets shall be not less than three (3) inches in diameter.

Every building of fifteen stories or more in height shall have, on the inside of the exterior walls one or more metallic stand-

pipes at least six (6) inches in diameter which shall have a six-way siamese inlet attached thereto four (4) feet above the line of the sidewalk; and at each story there shall be a three (3) inch gate valve, with reducers to two and one-half ($2\frac{1}{2}$) inches, provided with cap and chain. There shall be an outlet at the end of each standpipe, over the roof, which shall be connected with a four-way siamese having four (4) three-inch gate valves, with reducers to two and one-half ($2\frac{1}{2}$) inches, provided with cap and chain. All connections for inlets and outlets shall be not less than three (3) inches in diameter.

The Board of Public Works is hereby given the power to locate and inspect said standpipes and fire escapes, to see that the same are properly constructed and located, as in this Ordinance prescribed. All standpipes on buildings must receive at least one heavy coat of lead paint, be kept in good order and repair and free from any and all obstructions.

The provisions of this section shall not apply to buildings of Class "A." Buildings of Class "A" shall, however, be provided with suitable standpipes on the exterior or interior of their front walls, with suitable inlets and outlets thereto, in accordance with the provisions of this Section and Ordinance.

(Exits for Lodging, Apartment and Tenement Houses, Hotels, Hospitals and Asylums.)

Sec. 86. Frame buildings used as lodging, apartment and tenement houses, hotel, hospitals or asylums, shall have on each floor open halls at least three feet and six inches wide, which shall lead to all fire escapes.

Such buildings, if containing more than four apartments or suites, on any one floor, shall be provided with at least two staircases.

(Specifications for the Erection and Construction of Fire Escapes.)

Sec. 87. Where a vertical metallic ladder is required, it shall be constructed according to the following requirements:

Size of metal for ladder, $2\frac{3}{8}$ in.

Size of rungs for ladder, $\frac{3}{4}$ in. diameter.

Size of grating bars for balconies, $1\frac{1}{2} \times 5-16$ in.

Size of cross-bearing bars carrying gratings, $1\frac{1}{2} \times \frac{3}{8}$ in.

The outside frames of all fire escapes carrying the gratings shall be two-inch angle iron shall extend all around the platform, and they must be bolted to the building.

The size of the bearing metal carrying platforms shall not be less than two-inch channel iron, and the braces carrying the same shall be $1\frac{1}{2} \times 1\frac{1}{2}$ inches, and must be bolted through the building.

The top rail of balconies eight (8) feet or less in length shall be $1\frac{1}{2} \times \frac{3}{8}$ inches.

Balconies over eight (8) feet in length shall have in center one extra rail of the same size as the top rail.

The trimmings for finishing outside rails shall be $\frac{1}{4} \times \frac{1}{4}$ in.

The height of railings of balconies shall not be less than two feet six inches, and the width of balconies not less than three feet.

All rails and bearing beams shall extend through the wall or studding and have washers and nuts on the same.

Where the vertical ladders join, they shall be connected and bolted with not less than four bolts on each side.

Screws or lag screws shall not be used in the construction of fire escapes.

All balconies shall be constructed with circular corners.

All nuts shall show on the outside of building.

Openings in balconies shall not be less than two feet square.

Brackets carrying platforms shall not be more than five feet apart.

Perpendicular ladders shall be at least eight inches from the building.

Finishing on balconies shall not extend outside the rail.

Gratings on platforms may be placed on edge, and the grating bars of all platforms shall not be more than one inch apart, and in all cases shall be made of iron and steel.

All brackets carrying balconies shall be bolted through the entire walls or studding; the bolts shall not be less than seven-eighths ($\frac{7}{8}$) of an inch, and they shall have nuts and washers.

In frame buildings, where the studding does not correspond with the measurements for balconies and ladders extra headers shall be inserted between the studding, and shall be of the same thickness of the studding and securely spiked.

Where metallic stair fire escapes are required, they shall be constructed according to the following requirements:

Balconies shall be placed upon buildings as the Board of Public Works may direct.

Where the brackets support the stairs on stair fire escapes, the brackets shall be constructed of three-inch channel iron.

The platforms of balconies shall be the same as required for vertical ladders, and shall be placed on the line of the top of the flooring boards of each story. Said platforms shall be supported upon iron brackets, not more than five feet apart, and shall in all cases be built into and anchored to the walls of masonry, during the construction of the walls, and shall go through the entire thickness of said walls, and must be securely fastened on the inside of the building.

The width of all balconies from the face of the wall out shall not be less than three feet six inches; and the length of all balconies shall be regulated by the Board of Public Works.

In the floor or platform of all balconies, there shall be an opening, not less than two feet wide and three feet six inches long, inclosed and protected on three sides.

The railings and balconies shall be constructed as required for ladders. There shall be a communication from balcony to balcony by means of inclined stairs, and no ladder will be allowed below the line of the flooring of the uppermost story of any building.

Said stairs shall have an inclination from the perpendicular of not less than four inches to every twelve inches of rise, and shall be made of side stringers of not less than $4 \times \frac{1}{4}$ inch steel; threads must be turned down on ends and riveted well into each stringer at a distance apart of sixteen inches for said inclination. All such stairs must be provided with substantial railings of $1 \frac{1}{4}$ inch pipe; the sides shall be well supported by suitable stand-

ards of $1\frac{1}{4}$ inch pipe at proper distances, viz., four standards, to each run of steps, and thoroughly bolted to the stringers.

The ladders extending from the upper balconies to the roof may be perpendicular, but must be well braced with iron brackets.

AWNINGS, SHADES AND BALCONIES.

Sec. 88. All awnings, shades and balconies shall be at least ten (10) feet above the line of the curb level and securely supported only on wrought iron brackets built into the walls, and shall not be less than ten feet above the line of the curb level of the sidewalk, and a gutter shall thereon be formed to carry off the water to the line of the building and thence to the street gutter. No gutters shall be required on cloth or canvas awnings or shades. The height of all movable canvas or cloth awnings or shades shall be not less than seven and one-half feet above said curb level. Awnings, shades and balconies shall not extend beyond the line of the curb, provided, however, that no awning, shade or balcony shall be erected on any building facing on any street, lane, alley or place which is twenty feet or less in width; and no awning, shade or balcony shall be constructed on any building within the fire limits unless the same be constructed of fireproof material, and all cloth or canvas awnings shall be kept raised, except when the sun shines on the spot to be protected by same.

SIDEWALK WORK. (Vaults Under Sidewalks.)

Sec. 89. Where the space under the sidewalks is excavated for a vault, a sufficient concrete, stone or brick wall, and brick or concrete arches between iron and steel beams, shall be built to retain the roadway of the street, and the side, end or party wall of such building shall extend under the sidewalk, of sufficient thickness, to such wall.

The height of area retaining or embankment walls shall be computed from the

top of the ground which they are built to retain, and shall not be less than seventeen one-half ($17\frac{1}{2}$) inches thick for the first four (4) feet below such ground, and increased four (4) inches in thickness for every four (4) feet in depth below such seventeen one-half ($17\frac{1}{2}$) inch wall.

Embankment or retaining walls which do not have sidewalks or buildings to support them must be of such thickness as good engineering practice requires.

No wooden bulkhead shall be erected, constructed or used as an embankment or retaining wall exceeding five (5) feet in height, except where it is necessary in retaining the soil in making excavation for the purpose of construction.

All works supporting the sidewalk shall rest upon and be of incombustible material. Openings in sidewalks for the admission of coal or light, or for manholes, or for any other purpose, if placed outside the property line, shall be covered with lens lights set in iron or cement frames, or with iron covers having a rough surface, and rabbeted flush with the sidewalk.

No plane surface of glass or iron more than four (4) inches in diameter shall be placed in any sidewalk. When a cover is placed in any sidewalk it shall be placed as near as practicable to the line of the curb, except for steps and area ways. All spaces under sidewalks shall be thoroughly ventilated. All such spaces shall be built and occupied subject to the conditions following:

(a) The right of the City and County to suspend or annul the privilege of maintaining such cellar or vault, or to apply such sub-sidewalk space, or any portion thereof, to municipal uses.

(b) The permittee shall deposit with the Board of Public Works the sum of Twenty Dollars (\$20.00) for each and every twenty-five (25) feet of the frontage, or fraction thereof, of the premises in front of which an excavation for such cellar or vault is to be made, as a guaranty for the proper restoration of any portion of the roadway, fronting the same, which may be disturbed or injured by reason of excavating and constructing such cellar vault; said deposit shall be refunded to the per-

mittee, upon the indorsement on the permit issued therefor, of a certificate of the Bureau of Streets, certifying to the satisfactory condition of such roadway.

(c) The permittee shall construct a temporary sidewalk, under the direction and to the satisfaction of, the Board of Public Works, for public use, and maintain the same during the time of the excavation and construction of such cellar or vault; and he shall strictly comply, in all respects, with the provisions of Ordinances relating to cellars or vaults under public sidewalks.

(Areas.)

Sec. 90. All areas set back from the street line shall be properly protected with suitable railings, or covered over; those on the sidewalk shall have iron doors which shall be so made that when opened they will form guards.

When areas are covered over, iron, or iron and glass combined, stone or other incombustible materials supported on brick, concrete or stone walls, or on iron or steel beams shall be used. Areaways on sidewalks shall not exceed three (3) feet in width, measured from the street line.

(Area Walls for Protection of Hydrants.)

Sec. 91. The owner or owners, agent or agents, or the person or persons having control of any building shall build or cause to be built, when requested to do so by the Board of Public Works, a substantial brick wall, for the protection of the hydrant bend; said wall shall be not less than eight (8) inches in thickness, and must be built from the bottom of the basement to the sidewalk; said wall must be built in any portion of the basement that the Board of Public Works may direct, and it must be plastered on both sides with good cement plaster, so as to be perfectly water tight, should the hydrant bend burst.

PROTECTIONS FOR GIRDERS, COLUMNS, ETC.

Sec. 92. In all buildings hereafter erected or altered all iron and steel columns,

except those fronting on a street, and including those under sidewalks and areas, shall be constructed double, that is, an outer and inner column, the inner column must be of sufficient strength alone and so protected as to be wholly secure against fire. Where the column or columns is or are protected by means of terra cotta, brick or plastering, three-quarters ($\frac{3}{4}$) of an inch thick, applied to metal laths, with face of plastering one and one-half ($1\frac{1}{2}$) inches from the metal supports, then and in that case the outer columns may be omitted. All girders, beams and lintels of iron and steel used to support any part of a building or structure, except those supporting a wall fronting on a street, and including those under sidewalks and areas, shall be protected by means of terra cotta or plastering, three-quarters ($\frac{3}{4}$) of an inch in thickness, applied to metal laths, with face of plastering one and one-half ($1\frac{1}{2}$) inches from the metal support.

TANKS.

(Tanks in Buildings of Classes "A," "B" and "C.")

Sec. 93. Tanks containing more than five hundred (500) gallons of water or other fluid placed on the roof or above the roof of any building, shall be supported on iron or steel beams of sufficient strength to safely carry the same; and the beams shall rest at both their ends on brick walls or on iron or steel girders or iron or steel columns or piers of masonry. Underneath such water tanks or on the side near the bottom thereof, there shall be a short pipe or outlet, not less than four (4) inches in diameter, fitted with a suitable valve having a lever or wheel handle to same, so that firemen or others can readily discharge the weight of the fluid contents from the tank, in case of necessity. Where practicable, such tanks shall be placed at one corner on the roof of a building, and shall not be placed over nor near a line of stairs. Covers on top of water tanks placed on roofs, if of wood, shall be covered with metal.

(Tank Towers.)

Sec. 94. Tank covers erected within the

fire limits shall be constructed entirely of non-combustible materials.

(Tank Towers on Buildings.)

No tank tower or frame shall be constructed on any building unless said tower or frame is constructed entirely independent of the roof or any floors of the building.

PART III.

ALL BUILDINGS EXCEPT WOOD FRAME BUILDINGS.

(Other Sections Applicable to These
Buildings Are in Part II.)

(Walls.)

Sec. 95. The walls of all buildings, other than wood frame or wooden buildings, shall be constructed of stone, brick, cement concrete, iron, steel or other hard, incombustible material.

All buildings shall be inclosed on all sides with independent or party walls.

(Buildings in Fire Limits.)

Sec. 96. Every building hereafter erected within the fire limits shall be constructed in accordance with the requirements of this Ordinance for the construction of buildings of either Class A, Class B or Class C.

(Buildings of Class "A," "B" and "C.")

Sec. 97. Class "A," termed "fireproof," or "skeleton construction," shall include all buildings wherein all external and internal loads and strains are transmitted from the top of the building to the foundation by skeleton or frame work of steel, and the beams and girders of which are riveted to each other at their respective juncture points. A building of this class must be constructed of non-inflammable material throughout, and all interior constructive metal work, with the exception of the framing for elevators and staircases, shall be protected from fire by brick or terra cotta at least one and one-half inches thick, or by plastering three-quarters of an inch thick applied to metal lath. The face of the plastering shall be

one and one-half inches from the metal. Wood may be used only for window and door frames, sashes, standing finish, hand rails for stairs, and for the upper and under floors and their necessary sleepers. Wood may also be used for isolated furring blocks, but this class shall not permit the use of laths or furrings of wood.

Class "B." A building of this class shall be constructed with all its exterior walls and piers of masonry, or of masonry and steel, and all exterior surfaces other than masonry shall be covered with non-inflammable materials.

All partitions, furred walls or other plastered surfaces throughout, shall be metal lathed. All interior metal work shall be protected as provided in buildings of "Class A." Wood may be used as in Class "A" and in addition the floor and ceiling joists, girders, posts, roof boards and partitions may be of wood in such places as does not violate the requirements of any section or clause of this Ordinance.

Class "C." A building of this class shall be constructed the same as Class "B" in every respect, except as to the requirements for interior lathing.

(Limit of Height of Buildings of Classes "A," "B" and "C.")

Sec. 98—	Feet.
Class A, limit of height.....	201
Class B, limit of height.....	100
Class C, limit of height.....	82

(Slow Burning or "Mill" Construction.)

Sec. 99. A building of the slow burning or "Mill" construction type is a building whose outside walls are built of masonry, concentrated in piers or buttresses, between which is a thin wall containing the door and window openings, and whose floors and roof are constructed of heavy timbers, covered with plank of a suitable thickness; the girders being supported between the walls by posts.

(Manufacturing or Storage Buildings of Metal.)

Sec. 100. One-story buildings, used for manufacturing or storing purposes, may be enclosed with steel frames covered with steel sheathings in lieu of masonry

walls.

THICKNESS OF WALLS.

(Enclosure Walls of Class "A" Buildings.)

Sec. 101. Walls of brick built in between iron or steel columns, and supported wholly on iron or steel girders, shall be not less than thirteen (13) inches thick for seventy-five (75) feet of the uppermost height thereof, or to the tier of beams nearest to that measurement, in any building so constructed, and every lower section of sixty (60) feet, or to the tier of beams nearest to such vertical measurement, or part thereof, shall have a thickness of four (4) inches more than is required for the section next above it down to the tier of beams nearest to the curb level; and thence downward, the thickness of walls shall increase in the ratio of four (4) inches for every fourteen (14) feet, or part thereof.

(Curtain Walls.)

Sec. 102. Curtain walls built in between piers or iron or steel columns, and not supported on steel or iron girders, shall be not less than thirteen (13) inches thick for sixty (60) feet of the uppermost height thereof, or to the tier of beams nearest to that height, and they shall be increased four (4) inches for every additional section of sixty (60) feet, or to the tier of beams nearest to that height, and they shall not be used as bearing walls.

(Thickness of Exterior Walls of Class "B" and "C" Erected Within the Fire Limits.)

Your Card in the Daily Pacific Builder goes direct to the Owner, the Architect, the Builder and the Material Man.—It goes there every day. It talks to the man you want to reach.—Ring up South 781 or address a postal to 1508 Market St. for rates.

If any story exceeds in height the number of feet prescribed in the tables, the thickness of each external and party wall throughout such story shall be increased four (4) inches for every five (5) feet, or fraction thereof, in excess of the tabulated height.

The exterior walls of brick or stone buildings shall be the front, rear and side walls, and such walls shall extend from the foundation to the top of such buildings.

(Thickness of Exterior Walls of Buildings
Outside of Fire Limits, and Dwelling
Houses Within the Fire Limits.)

TABLE NO. 2

THICKNESS OF EXTERIOR WALLS.

Height up to.....	15 feet.		26 feet.		36 feet.		48 feet.		60 feet.	
Length of Walls up to	D.	E.	D.	E.	D.	E.	D.	E.	D.	E.
Foundation	13 in.	13 in.	13 in.	17 in.	17 in.	17 in.	17 in.	21 in.	21 in.	21 in.
First story	9 in.	13 in.	13 in.	13 in.	13 in.	13 in.	13 in.	17 in.	17 in.	17 in.
Second story			9 in.	13 in.	13 in.	13 in.	13 in.	13 in.	13 in.	17 in.
Third story					9 in.	13 in.	13 in.	13 in.	13 in.	17 in.
Fourth story							9 in.	13 in.	13 in.	13 in.
Fifth story									13 in.	13 in.

If any wall exceeds in height the number of feet prescribed in the tables, the thickness of each exterior and party wall throughout such story shall be increased

fraction thereof, in excess of the tabulated height.

(Brick Walls Outside Fire Limits.)

Sec. 105. (a) Every exterior party and interior weight-bearing wall of any brick or stone building outside the fire limits, any point of which exceeds sixty (60) feet in height above the foundation wall, shall be built of such thickness and in such manner as is required for the walls of buildings of Class "A," "B" and "C" within the fire limits. (See Table No. 1.) All other walls shall be built throughout the different stories of the thickness shown in Table No. 2.

(b) When a wall is only fifty (50) feet long, or when it is interrupted by cross-walls at intervals of fifty (50) feet or less, said cross-walls being the same height as the outside walls, and of the same thickness, said walls shall be constructed according to the dimensions given in the column "D" of Table No. 2; but if said walls are more than fifty (50) feet long, and are not interrupted by cross-walls at intervals of fifty (50) feet, then said walls shall be constructed according to the dimensions given in columns "E" of Table No. 2.

(c) Walls shall not be built less than nine (9) inches thick.

(Foundations.)

Sec. 106. All buildings, except timber construction, and buildings erected upon solid rock or upon wharves and piers on the water front, shall have foundations of brick, stone, iron, steel or concrete, or other approved material, laid not less than four (4) feet below the surface of the earth, on the solid ground or level surface or rock, or upon piles or ranging timbers when solid earth or rock is not found. Piles intended to sustain a wall, pier or post must be spaced not more than thirty-six (36) nor less than twenty (20) inches on centers, and they shall be driven to a solid bearing if practicable to do so; and the number of such piles must be sufficient to support the superstructure proposed. No pile shall be used of less dimensions than five (5) inches at the small end and ten (10) inches at the butt for

short piles, or piles twenty (20) feet or less in length and twelve (12) inches at the butt for long piles, or piles more than twenty (20) feet in length. No pile shall be weighted with a load exceeding forty thousand (40,000) pounds. When a pile is not driven to refusal, its safe sustaining power in tons shall be determined by the following formula: Twice the weight of the hammer, in tons, multiplied by the height of the fall, in feet, divided by the least penetration of pile under the last blow in inches plus one (1). The Board of Public Works shall be notified of the time when such test piles will be driven, that they may be present in person or by representative. The tops of all piles shall be cut off below the lowest water line. When required, concrete shall be rammed down in the spaces between the heads of the piles to a depth and thickness of not less than twelve (12) inches, and for one (1)

foot in width outside of the piles. Where ranging and capping timbers are laid on piles for foundations they shall be of sound redwood, yellow fir or pine, not less than six (6) inches thick, and must be properly joined together, and their tops laid below the lowest water line. Where metal is incorporated in, or forms part of, a foundation, it shall be thoroughly protected from rust by paint, asphaltum, concrete, or by such materials and in such manner as may be approved by the Board of Public Works. When footings of iron or steel for columns are placed below the water level they shall be similarly coated or inclosed in concrete, for preservation against rust. When foundations are carried down through earth by piers of stone, brick or concrete in caissons, the loads on same shall be not more than fifteen (15) tons to the square foot when carried down to rock; ten (10) tons to the square foot when carried down to firm gravel or hard clay; eight (8) tons to the square foot when in open caissons or sheet pile trenches carried down to rock. Wood piles may be used for the foundations under frame buildings built over the water or on marsh land, in which case the piles may project above the water a sufficient height to raise the building above high tide; the piles must then be properly capped, and

the building may be placed directly thereon without other foundation.

(Foundation Walls.)

Sec. 107. Foundation walls shall include all walls and piers built below the curb level, or nearest tier of beams to the curb, to serve as supports for walls, piers, columns, girders, posts or beams. Foundation walls shall be built of stone, brick, cement, concrete, iron or steel. If built of rubble stone they shall be at least eight (8) inches wider than the wall next above them to a depth of twelve (12) feet below the curb level; and for every additional ten (10) feet, or part thereof, deeper, they shall be increased four (4) inches in thickness. If built of brick they shall be at least four (4) inches thicker than the wall next above them, to a depth of fourteen (14) feet below the curb level; and for every additional ten (10) feet, or part thereof, deeper, they shall be increased four (4) inches in thickness.

The footing or base course shall be of stone or concrete, or both, or of concrete and stepped-up brickwork, of sufficient thickness and area to safely bear the weight to be imposed thereon. If the footing or base course be of concrete, the concrete shall not be less than twelve (12) inches thick. If of stone, the stones shall be not less than two (2) by three (3) feet, and at least eight (8) inches in thickness for walls, and not less than ten (10) inches in thickness if under piers, columns or posts; the footing or base course, whether formed of concrete or stone, shall be at least twelve (12) inches wider than the bottom width of walls, and at least twelve (12) inches wider on all sides than the bottom width of said piers, columns or posts. All base stones shall be well bedded and laid crosswise, edge to edge.

If stepped-up footings of brick are used in place of stone above concrete, the offsets, if laid in single or double courses, shall not be more than two (2) inches, and footings must project at least half the width of the wall on either side where feasible, so as to properly distribute the load to be placed thereon.

If, in place of a continuous foundation

wall, isolated piers are to be built to support the superstructure, where the nature of the ground and character of the building make it necessary, in the opinion of the Board of Public Works, inverted arches resting on a proper bed of concrete, both designed to transmit with safety the superimposed loads, shall be turned between the piers. The thrust of the outer piers shall be taken up by suitable wrought iron or steel rods and plates.

Grillage beams, of wrought iron or steel resting on a proper concrete bed, may be used. Such beams must be provided with separators and bolts, and they must be of such sizes and so arranged as to transmit with safety the superimposed loads, and the spaces between them must be solidly filled with concrete.

All stone walls twenty-four (24) inches or less in thickness shall have at least one (1) header extending through the wall in every three (3) feet of height from the bottom of the wall, and in every three (3) feet of the length of the wall; and, if over twenty-four (24) inches in thickness, the wall shall have one (1) header for every six (6) superficial feet on both sides of the wall, laid on top of each other, so as to bond together, and running into the wall at least two (2) feet.

All headers shall be at least twelve (12) inches in width and eight (8) inches in thickness, and consist of good flat stones. No stone shall be laid in such walls in any other position than on its natural bed.

No stone shall be used that does not bond or extend into the wall at least six (6) inches. Stones shall be firmly bedded in cement mortar, and all spaces and joints must be thoroughly filled.

(Walls in Part of Masonry and Iron.)

Sec. 108. Walls may be built of masonry or terra cotta, combined with iron or steel, in which case the walls may be built of one-third less thickness than is required for solid masonry walls, provided such walls meet the requirements of this Ordinance as to strength, and provided all such weight-bearing or construction metal is protected from fire by brick or terra cotta.

(Walls and Piers.)

Sec. 109. In all walls of the thickness specified in this Ordinance the same amount of materials may be used in piers or buttresses. Said piers and buttresses shall not be more than fourteen (14) feet on centers, and walls between said buttresses shall be not less than thirteen (13) inches thick. Bearing walls are those walls on which the beams, girders or trusses rest. If any horizontal section through any part of any bearing wall in any building shows more than thirty (30) per cent areas of flues and openings, the said wall shall be increased four (4) inches in thickness for every fifteen (15) per cent, or fraction thereof, of flue or opening area in excess of thirty (30) per cent.

The walls and piers of all buildings shall be properly and solidly bonded together with close joints filled with mortar. They shall be built to a line and be carried up plumb and straight. The walls of each story shall be built up the full thickness to the top of the beams above.

All bricks shall be well wet before being laid.

All basement piers shall be built of concrete, stone or good, hard, well burnt brick laid in cement mortar. Every brick pier containing less than nine (9) superficial feet at the base, which supports any beam, girder, arch, or column on which rests a wall or lintel spanning an opening over ten feet and supporting a wall, shall at intervals of not over five (5) feet, in a vertical line, have built into it a bond stone not less than nine (9) inches thick, and of the full size of the piers. All cap and bond stones of cut granite or stone, proportioned to the weight to be carried, but not less than nine (9) inches in thickness, by the full size of the pier, shall be set under all columns or girders, except where a nine (9) inch bond stone is placed immediately below said cap stone, in which case the cap stone may be reduced in horizontal dimensions, at the discretion of the Board of Public Works. Isolated brick piers shall not exceed in height ten (10) times their least dimensions.

In all brick walls every sixth course

shall be a heading course, except where walls are faced with brick in running bond, in which latter case at least every sixth course shall be bonded into the backing with galvanized iron ties at least 1-16 inch thick. Where face brick of a different thickness from the brick used for backing is used, the courses of the exterior and interior brickwork shall be brought to a level bed at intervals of not more than nine (9) courses of the face brick, and the face brick shall be properly tied to the backing by a galvanized iron tie or by a heading course of the face brick. All bearing walls, faced with brick laid in running bond, shall be four (4) inches thicker than the walls are required to be under any section of this Ordinance.

(Ashlar Facing.)

Sec. 110. Stone used for the facing of any building, and known as ashlar, shall be not less than four (4) inches thick.

Stone ashlar shall be anchored to the backing, which shall be of such thickness as to make the walls, exclusive of the ashlar, conform in thickness with the requirements of Sections 103 and 104 of this Ordinance, provided that if the ashlar be at least eight (8) inches thick, and bonded into the backing, it may be counted as part of the thickness of the wall.

Iron ashlar plates used in imitation of stone ashlar on the face of a wall shall be backed with the same thickness of brickwork as stone ashlar. And all ashlar stone, unless bonded, shall be strongly and securely anchored to the wall with iron anchors laid into the stone at least one (1) inch.

(Mortar for Walls and Ashlar.)

Sec. 111. All foundation walls, isolated pliers, parapet walls and chimneys above roofs, and all other walls built of brick and stone shall be laid in lime and cement mortar mixed as specified in Section 33.

The backing of all stone ashlar shall be laid with cement mortar, or cement and lime mortar mixed, but the back of the ashlar may be parged with lime mortar to prevent discoloration of the stone.

(Increased Thickness of Walls for Buildings More Than One Hundred and Thirty-seven 6-12 Feet in Depth.)

Sec. 112. For each one hundred (100) feet, or fraction thereof, that any building without a cross wall or buttress, exceeds a depth of one hundred and thirty-seven and one-half ($137\frac{1}{2}$) feet, the side or bearing walls thereof shall be increased in thickness four (4) inches more than is prescribed in this Ordinance for the thickness of walls.

(Exterior Walls for Certain Buildings.)

Sec. 113. The exterior walls of churches, theaters, foundries, machine shops, schoolhouses and other buildings of a public character shall in no case be less than as specified in Class "A," "B" and "C" of this Ordinance for warehouses and stores.

(Walls Over Twenty-five Feet Apart and Not to Exceed One Hundred Feet Apart.)

Sec. 114. In all brick or stone buildings over twenty-five (25) feet in width, if there are no brick partition walls or girders supported on iron or wooden columns, or piers of masonry, the bearing walls shall be increased four (4) inches thicker than is otherwise prescribed. When iron or wooden girders are substituted for partition walls, the building shall not exceed one hundred (100) feet between the brick walls. Brick partition walls shall in all cases be carried through the roof and form fire walls as provided in Section 120.

(Walls of Buildings on Street Corners.)

Sec. 115. In all buildings more than two (2) stories in height hereafter erected on a street corner in this city and county, except buildings used or occupied as dwelling houses, hotels, apartment, tenement or lodging houses or offices, the bearing walls, if there are openings in them, shall in all cases be four (4) inches thicker than is otherwise prescribed in this Ordinance. The material used in the extra four inches above mentioned may be concentrated in piers or buttresses.

(Reduced Thickness for Interior Walls.)

Sec. 116. When the walls of any build-

ing are less than twenty-five (25) feet apart, and less than forty (40) feet in depth, or when there are cross walls which intersect walls, not more than forty (40) feet apart, or when piers or buttresses are built into the walls, the interior walls may be reduced in thickness in just proportion to the number of cross walls, piers or buttresses, and their nearness to each other; provided, however, that this section shall not apply to walls below sixty (60) feet in height, and that such wall shall not be less than thirteen (13) inches thick at the top, and gradually increased in thickness by set-offs to the bottom.

(Existing Party Walls.)

Sec. 117. Walls heretofore built for or used as party walls, whose thickness at the time of their erection was in accordance with the requirements of the then existing laws, but which are not in accordance with the requirements of this Ordinance, may be used, if in good condition, for the ordinary uses of party walls, provided the height of the same be not increased.

(Lining Existing Walls.)

Sec. 118. When the height of existing party or independent walls, whose thickness is less than that required under this Ordinance is increased it shall be done by iron or steel girders and columns, which shall be properly anchored to said walls or a lining of brickwork to form a combined thickness with the old wall of not less than four (4) inches more than the thickness required for a new wall of the height to which the old wall is to be increased. The said linings shall be supported on proper foundations and carried to such height as the Board of Public Works may require. No lining shall be less than nine (9) inches in thickness, and all lining shall be laid in cement, mortar and thoroughly anchored to the old brick walls with suitable wrought-iron anchors, placed two (2) feet apart, and properly fastened or driven into the old walls in rows alternating vertically or horizontally with each other. The old walls must be cleaned of plaster or

other coatings before any lining is built against the same. The floor timbers shall cross the brick lining and rest in both old and new walls.

(Walls of Unfinished Buildings at the Time of Passage of This Ordinance.)

Sec. 119. Any building, the erection of which was commenced in accordance with the specifications and plans submitted to and approved by the Department of Public Works prior to the passage of this Ordinance, if properly constructed and in safe condition, may be completed, or built upon, in accordance with the requirements of the law, as to thickness of walls, in force at the time such specifications and plans were approved.

(Parapet or Fire Walls.)

Sec. 120. All exterior and division or party walls over fifteen (15) feet high, excepting where such walls are to be finished with cornices, gutters or crown mouldings, shall have parapet walls not less than nine (9) inches in thickness, and carried two (2) feet above the roof; but for warehouses, factories, stores and other buildings used for commercial or manufacturing purposes, the parapet walls shall be not less than thirteen (13) inches in thickness, and carried three (3) feet above the roof, and all such walls shall be coped with stone, terra cotta, cast iron, or cement.

(Hollow Walls.)

Sec. 121. In all walls that are built hollow the same quantity of stone, brick or concrete shall be used in their construction as if they were built solid, as in this Ordinance provided, and no hollow wall shall be built unless the parts of same are connected by proper ties, either of brick, stone or iron, placed not over twenty-four (24) inches apart.

If one or both of the solid parts of the wall are less than nine (9) inches in thickness, such walls shall not be used as supports for any part of the structure of such building; but if both the solid parts of such hollow walls are nine (9) inches or more in thickness, such walls

may be used as bearing walls, and in all cases where the load is imposed upon such hollow walls, or any part thereof, there shall be bond stones or iron bond plates covering the whole of the solid parts of such walls, and so proportioned as not to strain either the material of the wall or of such bond stones or bond plates.

(Brick and Hollow Tile Partitions.)

Sec. 122. Eight (8) inch brick and six (6) inch and four (4) inch hollow tile partitions, of hard burnt clay or porous terracotta, may be built, not exceeding in their vertical portions a measurement of fifty (50), thirty-six (36) and twenty-four (24) feet, respectively, and in their horizontal measurement a length not exceeding seventy-five (75) feet, unless strengthened by proper cross-walls, piers or buttresses, or built in iron or steel framework. All such partitions shall be carried on proper foundations, or on iron or steel girders, or on iron and steel girders and columns, or piers of masonry, and shall not be used as bearing walls.

. (Recesses and Chases in Walls.)

Sec. 123. Recesses for stairways or elevators may be left in the foundation or cellar walls of all buildings, but in no case shall the walls be of less thickness than the walls of the fourth story, unless reinforced by additional piers with iron or steel girders, or stone or steel columns and girders, securely anchored to walls on each side. Recesses for alcoves and similar purposes shall have not less than eight (8) inches of brickwork at the back thereof and shall be not more than eight (8) feet in width. Recesses shall be arched

over or spanned with iron or steel lintels, and shall not be carried up higher than eighteen (18) inches below the bottom of the beams of the floor next above.

A chase for water or other pipes shall not be made in any pier; and in a wall, the chase for such pipes shall not exceed one-third (1-3) the thickness of such wall. The chases around such pipe or pipes shall be filled with incombustible material for a distance of one (1) foot at the top

and bottom of each story.

A horizontal recess or chase exceeding four (4) feet in length shall not be allowed in any wall without the permission of the Board of Public Works.

The aggregate area of recesses and chases in any wall shall not exceed one-fourth ($\frac{1}{4}$) of the whole area of the face of the wall on any story, nor shall any such recess be made within a distance of six (6) feet from any other recess in the same wall.

CONSTRUCTION OF WALLS.

(Walls, Tied, Anchored and Braced.)

Sec. 124. In no case shall any wall or walls of any building be carried up more than two (2) stories in advance of any other wall, except by permission of the Board of Public Works; but this prohibition shall not include the inclosure walls for skeleton buildings. The front, rear, side and party walls shall be properly bonded together, or they shall be anchored to each other, every six (6) feet in their height by wrought iron tie anchors not less than one and one-half ($1\frac{1}{2}$) inches by three-eighths ($\frac{3}{8}$) of an inch in size, and not less than twenty-four (24) inches in length. The side anchors shall be built into the side or party walls not less than sixteen (16) inches, and into the front and rear walls, so as to secure front and rear walls to the side or party walls, when not built and bonded together. All exterior piers shall be anchored to the beams or girders on the level of each tier.

The walls and beams of every building, during the erection or alteration thereof, shall be strongly braced from the beams of each story, and, when required, shall also be braced from the outside, until the building is inclosed. The roof tier of wood beams shall be safely anchored, with plank or joist, to the beams of the story below until the building is inclosed.

(Arches and Lintels.)

Sec. 125. Openings for doors and windows in all brick or stone buildings shall have good and sufficient arches of stone, brick or terra cotta, well built and keyed, and with good and sufficient abutments;

or the openings shall have lintels of stone, iron or steel of sufficient strength, which shall have a bearing at each end of not less than five (5) inches on the wall. On the inside of all openings in which lintels shall be less than the thickness of the wall to be supported there shall be timber lintels, which shall rest at each end not more than three (3) inches on any wall, and shall have a suitable arch turned over the timber lintel. Or, the inside lintel may be of cast iron, wrought iron or steel, and in such case stone blocks or cast-iron or steel plates shall not be required at the ends where the lintel rests on the walls, provided the opening is not more than six (6) feet in width.

All masonry arches shall be capable of sustaining the weight and pressure which they are designed to carry. Tie rods shall be used where necessary to secure stability.

(Anchors and Ties.)

Sec. 126. In all brick or stone buildings beams and joists shall be tied to the walls or to themselves, so as to form a continuous tie across the building, every eight (8) feet.

All anchors shall be of three-eighths ($\frac{3}{8}$) by one and one-half ($1\frac{1}{2}$) inch band iron or heavier, or, if formed of round iron, they shall be of equal strength. They shall be at least three (3) feet long, with washers of iron at least six (6) by six (6) inches secured to them at the outer ends. The other ends shall be turned down two (2) inches, and shall be securely tied to the beam or joist, at the side, and in such a way that the anchor is self-releasing.

Self-releasing box anchors, provided they act satisfactorily as a tie and are of the required strength, may be used.

When walls run parallel or nearly parallel with floor beams, they shall be properly tied by iron straps and anchors to said floor beams every ten (10) feet; also see Section 41.

(Furred Walls.)

Sec. 127. In all brick walls furred with wood there shall be a horizontal furring strip at the top and bottom of joists, except where joists run parallel with and

up against walls.

Furring against brick walls in buildings of Classes "B" and "C" shall not exceed one (1) inch in thickness; and wedges of wood or iron shall not be driven into any wall within eight (8) inches of any flue or fireplace.

(Timber in Walls Prohibited.)

Sec. 128. No timber shall be used in any wall of any building where stone, brick or iron is commonly used, except inside lintels, as in this Ordinance provided, and brace blocks not more than eight (8) inches in length.

(Openings in Party Walls.)

Sec. 129. Party walls shall be constructed of solid brick or stone walls. Openings in said walls shall not exceed eight (8) feet in width, and shall have an iron lintel or a solid brick arch formed with three (3) rollocks, with wooden tin-clad fire doors on each side of each such opening, and not more than one (1) opening in every fifty (50) feet or portion thereof in the length, shall be allowed in said walls in any story.

Said fire doors shall be made of two thicknesses of matched redwood boards, crossed at right angles, aggregating one and three-quarter ($1\frac{3}{4}$) inches in thickness, nailed with clinched nails, and covered on both faces and edges, first with one-eighth ($\frac{1}{8}$) of an inch of sheet asbestos, and then with ten (10) by fourteen (14) inch tin plate, with joints locked and hammered down over all nail heads. All hinges, hangers, latches and appurtenances shall be bolted to the doors; all tracks and stops shall be bolted through or into the brick wall with expansion bolts, and all eyes or lugs shall be built into the wall. Doors shall extend three (3) inches over masonry, and shall be hung upon iron eyes or frames, independently of any woodwork.

(Bond Iron.)

Sec. 130. Bond iron at least three by one-quarter ($3 \times \frac{1}{4}$) inches shall be placed under each tier of floor and ceiling joists of all brick and stone buildings other than Class "A" and run around the entire walls of the building, and must be lock jointed and

anchored at each angle.

BAY WINDOWS.

Sec. 131. All bay, oriel or swell windows within the fire limits, and in brick buildings outside of fire limits, exceeding in height the measurement allowed for frame buildings, shall be either covered with or constructed of fireproof material.

Piers between bay, oriel or swell windows in brick or stone buildings shall not be less than four (4) feet in width for buildings not more than three (3) stories in height; five (5) feet in width for buildings not more than five (5) stories in height, and six (6) feet in width for buildings not more than six (6) stories in height, and seven (7) feet in width for buildings not more than eight (8) stories in height.

The openings for bay, oriel or swell windows, in brick walls, shall have steel beams of proper strength to support the floors and load; these beams must extend at least eight (8) inches into the walls at both sides of the openings.

Bay, oriel or swell windows may project not more than three (3) feet over the street line, measured to the finish; and not more than three (3) feet from the face of the building; they must not be more than ten (10) feet wide, measured from end to end, and the finish of their soffits must be at least ten (10) feet above the sidewalk.

SKYLIGHTS.

Sec. 132.—All skylights placed in brick buildings shall be made of metal and shall be glazed with three-sixteenths (3-16) inch glass.

All skylights in buildings of Classes "A," "B" and "C" shall have the sashes and frames thereof constructed of iron and glass, and shall be self-supporting.

APPENDAGES WITHIN FIRE LIMITS.

Sec. 133. Appendages, within the fire limits, in Classes "B" and "C" buildings, such as skylights, dormer windows, cornices, gutters, mouldings, eaves, parapets, balconies, bay windows, towers, spires,

ventilators, erections on roofs and over elevators, turrets, lantern lights, if not wholly fireproof, shall be enveloped with fireproof materials, in which case the sheathing underneath must be covered with an approved fireproof paint; provided, however, that any of the said appendages that exceed the allowed limit of height of its class shall be wholly fireproof.

FIREPROOF SHUTTERS AND DOORS.

Sec. 134.—Excepting the front openings of buildings fronting on streets more than thirty (30) feet wide, or openings which are not above and within thirty (30) feet of the roof of another building, or which are not within thirty (30) feet of any opposite or diagonally exposed building, all exterior windows or openings of every brick or stone building more than two (2) stories high, or more than twenty-five (25) feet above the curb level (excepting buildings of Class "A") used as stores, storehouses, mills or manufactories, now or hereafter erected, shall have tin-clad doors or shutters, or, in lieu thereof, wire glass, not less than one-quarter ($\frac{1}{4}$) of an inch thick, hung with iron frames as herein provided, or self-coiling, rolling corrugated steel shutters, running in grooves and fitted with suitable appliances on the outside thereof, for the convenience of firemen in raising, provided, they are not locked, except in the first story; by permission of the Board of Public Works.

Openings on the first story may be fitted with doors or shutters of iron.

Tin-clad doors or shutters shall be made as follows: Of two thicknesses of matched redwood boards crossed at right angles, aggregating one and three-quarter inches, nailed with clinch nails, and covered first with one-eighth of an inch of sheet asbestos, then with 10x14-inch tin plate, with joints locked and hammered down over all nailheads, on both faces and edges; all hinges, hangers, latches and appurtenances to be bolted to the doors, blinds or shutters, and all tracks and stops to be bolted through or into the brick wall, with expansion bolts, and all eyes and lugs shall be built into

the walls.

All doors, blinds or shutters shall be hung upon iron eyes or frames, independent of any woodwork; and they shall extend three inches over the masonry, and those above the first floor shall be so arranged that they can be readily opened and closed from the outside.

Those on the first floor shall have the locks so arranged as to admit of easy destruction by the Fire Department or Fire Patrol.

No building hereafter erected, other than a dwelling house or fireproof building, shall have inside iron or steel shutters or windows above the first story, except when they cannot be placed on the exterior.

SPECIAL STRUCTURES.

(Grain Elevators.)

Sec. 135. Nothing in this Ordinance shall be so construed as to apply to or prevent the erection of what are known as grain elevators, as usually constructed, provided they are erected on tidewater, in isolated localities and outside the fire limits, under such conditions as the Board of Public Works may prescribe.

(Exhibition Buildings.)

Sec. 136. Buildings for fair and exhibition purposes, towers for observation purposes and structures for similar uses, whether temporary or permanent in character, shall be constructed in such manner and under such conditions as the Board of Public Works may prescribe for buildings outside of the fire limits.

(Smokehouses.)

Sec. 137. All smokehouses shall be of fireproof construction, with brick walls, iron doors and brick or metal roofs. An iron guard shall be placed over and three feet above the fire, and the hanging rails shall be of iron. The walls of all smokehouses shall be built up at least three (3) feet higher than the roof of the building in which they are located.

(Planing Mills, etc.)

Sec. 138. In buildings of Class "C,"

used as planing mills, wagon or carriage manufactories, furniture manufactories, or any other wood-working factories, all joists and studding bearing weight shall be covered with metal lath and plaster, and the floors shall be double, with the top floor laid over three-quarters ($\frac{3}{4}$) of an inch of mortar or two thicknesses of asbestos paper, unless such building is constructed on the slow burning or mill construction plan, in which case the piers shall be not less than nine (9) feet on centers, and upon them shall rest the girders. The floor shall extend from one beam to another, and shall be not less than three (3) inches thick.

All planks shall be laid to the end of the timbers. The brick walls and piers shall be of the size required by Section 103.

(Inclosure and Shed Coverings for the Protection of Pedestrians.)

Sec. 139. Whenever buildings shall be erected or increased to over sixty-five feet in height, upon or along any street, the owner, builder or contractor constructing or repairing such building, shall have erected and maintained, during such construction or repair, a shed which shall extend over the sidewalk from building line to the curb, which shed must be properly, strongly and tightly constructed, so as to protect pedestrians and others using such streets. Whenever outside scaffolds are required to carry on the construction of buildings over eighty-five feet in height, whether the same be constructed by poles or thrust-out scaffold, there shall be erected on its outer edge and ends an inclosure of wire netting of not over one inch mesh, or of boards not less than three-fourths of an inch thick, placed not over one inch apart, well secured to uprights not less than two inches by four inches, fastened to planks or timbers, and resting on put-logs or thrust-outs. The said enclosure shall be carried up at least five feet above the level on which the workmen employed on said front are working. The said thrust-outs shall be not less than three by ten of spruce or pine, and shall be doubled or tripled, as may be required for the load

to be carried, and they must be thoroughly braced and secured; or said timbers may be in one stick if proportioned to the load. The floorings on thrust-outs and put-logs shall be tightly constructed with plank. If the walls of such buildings are carried up two stories or more above the roofs of adjoining buildings, proper means shall be provided and used for the protection of skylights and roofs of such adjoining buildings. The protection over skylights shall be of stout wire netting not over three-fourths inch mesh, properly secured on stout timbers. All such sheds and inclosures shall be subject to the inspection of the Board of Public Works. Should said adjoining owners, tenant or lessee refuse to grant permission to have said roofs and skylights so protected, such refusal shall relieve the owner of the building in course of construction from any responsibility for damage done to the persons or property on or within the premises affected.

(Temporary Floors.)

Sec. 140. Any building more than three stories high in course of construction shall have the joists, beams or girders of each and every floor below the floor or level where any work is being done or about to be done covered with scaffold boards, laid close together, or with other suitable materials, to protect the workmen from falling between joists or girders, and from falling bricks, rivets, tools or other substances whereby life and limb are endangered.

FLOOR LOADS, ETC.

(Floor Loads.)

Sec. 141. The dead loads in all buildings shall consist of the actual weight of the walls, roofs, partitions and all permanent construction.

The live or variable loads shall consist of all loads other than dead loads.

Every floor shall be of sufficient strength to bear safely the weight to be imposed thereon in addition to the weight of the materials of which the floor is composed. If to be used as a dwelling house, apart-

ment house, tenement house, hotel or lodging house, each floor shall be of sufficient strength in all its parts to bear safely upon every superficial foot of its surface not less than sixty pounds; if to be used for office purposes, not less than seventy-five pounds upon any superficial foot above the first floor, and for the latter floor one hundred and fifty pounds; if to be used as a school or place of instruction, not less than seventy-five pounds upon every superficial foot; if to be used for stable and carriage house purposes, not less than seventy-five pounds upon every superficial foot; if to be used as a place of public assembly, not less than one hundred and twenty-five pounds upon every superficial foot; if to be used for ordinary stores, light manufacturing and light storage, not less than one hundred and twenty pounds upon every superficial foot; if to be used as a store where heavy materials are kept and stored, warehouse, factory or other manufacturing or commercial purpose, not less than one hundred and fifty pounds upon every superficial foot.

The strength of factory floors intended to carry running machinery shall be increased above the minimum given in this section in proportion to the degree of vibratory impulse liable to be transmitted to the floor, as may be required by the Board of Public Works.

The roofs of all buildings having a pitch of less than twenty degrees shall be proportioned to bear safely fifty pounds upon every superficial foot of their surface in addition to the weight of materials composing the same. If the pitch be more than twenty degrees the live load shall be assumed at thirty pounds upon every superficial foot measured upon an horizontal plane.

For sidewalks between the curb and area lines the live load shall be taken at three hundred pounds upon every superficial foot.

Every column, post or other vertical support shall be of sufficient strength to safely bear the weight of the portion of each and every floor depending upon it for support, in addition to the weight required as before stated to be supported safely upon said portions of said floor.

(Loads on Floors to be Distributed.)

Sec. 142. The weight placed on any of the floors of any building shall be safely distributed thereon. The Board of Public Works may require the owner or occupant of any building or of any portion thereof, to redistribute the load on any floor or to lighten such load, where it deems it necessary so to do.

(Strength of Temporary Supports.)

Sec. 143. Every temporary support placed under any structure, wall, girder or beam during the erection, finishing, alteration or repairing of any building or structure or any part thereof, shall be of sufficient strength to safely carry the load to be placed thereon.

STRENGTH AND WEIGHTS OF MATERIALS.

(Strength of Materials.)

Sec. 144. The dimensions of each piece or combination of materials used in the construction of any building shall be ascertained by computation according to the rules given by Trautwine's "Engineer's Pocket-Book," F. E. Kidder's "Architects and Engineers' Pocket-Book" or Haswell's "Mechanics and Engineers' Pocket-Book," except as may be otherwise provided in this Ordinance.

(Weights of Materials.)

Sec. 145. In computing the weights of walls, floors and materials, a cubic foot of materials shall be deemed to have the weight given in the tables of the above mentioned handbooks.

(Cast Iron Lintels.)

Sec. 146. Cast iron lintels shall not be permitted to span openings exceeding eight feet in width.

(Bearing Plates and Girder Straps.)

Sec. 147. When girders, beams and lintels rest upon brick walls or piers they shall rest upon granite blocks at least ten inches in thickness, and of proper size to distribute the load, so that the maximum load on the brick work shall not exceed ten tons per square foot, or upon iron or

steel plates of equal strength and of the same width and length; and in all cases where the girder carries a wall and rests upon brick piers the bearing shall be sufficient to carry the weight above with safety. And where the beams are supported by girders, the ends of the beams resting on the girders shall be strapped with wrought iron straps of the same size, and at the same distance apart, and in the same joists as the wall anchors.

GENERAL PROVISIONS.

(Stables.)

Sec. 148. Permits for public, livery and boarding stables, or for stables to accommodate more than six horses, will be granted upon presentation of the written consent of the owners of property within two hundred (200) feet of the stable. Buildings for stabling animals above the first or ground floor, unless fireproof, shall not be erected nor altered.

(Obstructions on Stairs.)

Sec. 149. Stairs or stairways passing from one floor to another in any building shall not be covered with a permanent flooring, but may be enclosed with a board partition extending from the floor to the ceiling, and provided with a door, which must be kept free from all obstructions at all times, so as to give to the Fire Department and Fire Patrol easy access from one floor to another, provided this section shall not apply to buildings used for public assemblages.

Goods or obstructions of any kind shall not be placed on the stairs of any building.

Explosive or inflammable compounds or combustible materials shall not be stored or placed under any stairway of any building, or used in any such place, or manner, as to obstruct or render egress hazardous in case of fire.

Sec. 150. Bay windows shall not be allowed on streets less than 35 feet wide.

(Board of Public Works to Stop Construction of Certain Buildings.)

Sec. 151. The Board of Public Works

shall have power to stop the construction of any building or the making of any alteration or repairs to any building when the same is done in a reckless or careless manner, or in violation of any of the provisions of this Ordinance, and to order in writing or verbally any and all persons in any way or manner whatever engaged in so constructing, altering or repairing any such building, to stop and desist therefrom, and the person or persons so ordered shall immediately comply therewith.

(Inspectors' Right to Enter Buildings.)

Sec. 152. The Architect and Inspectors of the Board of Public Works, so far as may be necessary for the performance of their duties, shall have the right to enter any new or unoccupied building, or any building under construction, repair, alteration or removal, or any building alleged to be unsafe or a menace to life and limb, upon showing their badge of office.

(Penalty.)

Sec. 153. Any person, firm, company or corporation that violates, disobeys, omits, neglects or refuses to comply with, or that resists or opposes the execution of any of the provisions of this Ordinance shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not exceeding five hundred dollars, or by imprisonment for not more than six months, or by both such fine and imprisonment; and every such person, firm, company or corporation shall be deemed guilty of a separate offense for every day such violation, disobedience, omission, neglect or refusal shall continue, and shall be subject to the penalty imposed by this section for each and every such separate offense; and any builder or contractor who shall construct any building in violation of any of the provisions of this Ordinance, and any architect having charge of such building, who shall permit it to be so constructed, shall be liable to the penalties provided and imposed by this section.

(Repealing Section.)

Sec. 154. Orders, Nos. 2,927, 2,979, 2,995, 2,996, 2,997, 2,998, 27 (Second Series), 68

(Second Series), 79 (Second Series), 90 (Second Series), 136 (Second Series), 157 (Second Series), 192 (Second Series) and also all Orders or parts of Orders, and all Ordinances or parts of Ordinances heretofore in force and effect, providing regulations pertaining to the erection, enlargement, raising, alteration or repair of buildings in the City and County of San Francisco, save and except Ordinance No. 88, "Providing for the erection, construction and alteration of buildings to be used for theatrical or operatic purposes, or for public entertainments of any kind, and prescribing rules and regulations to be complied with by the owners, managers, or lessees of such buildings," are hereby repealed.

Sec. 155. This Ordinance shall take effect and be in force from and after its passage.

In Board of Supervisors, San Francisco, February 2, 1903.

After having been published five successive days, according to law, taken up and passed by the following vote:

Ayes—Supervisors Alpers, Bent, Booth, Boston, Brandenstein, Braunhart, Connor, Curtis, Eggers, Loughery, Lynch, McClellan, Payot, Wynn.

No—Supervisor Wilson.

Absent—Supervisors Comte, D'Ancona, Sanderson.

CHAS W. FAY, Clerk.

Approved, San Francisco, February 5, 1903.

E. E. SCHMITZ,
Mayor and ex-officio President of the
Board of Supervisors.

A

All Buildings, except Wood Frame Build- ings	95-194
Anchors and Straps for Wood Joists and Girders	41
Anchors and Ties	126
Apartment House, Definition	6
Appendages, Belts, Gutters, Cornices, etc.	67
Appendages, within Fire Limits.....	133
Arches and Lintels.....	125
Arches, Trimmer	46
Areas	90-91
Awnings, Shades and Balconies.....	88
Area Walls for Protection of Hydrants..	91
Ashlar Facing	110
Attics to be divided into Compartments .	44

B

Balconies, Shades and Awnings.....	88
Bay Windows.....	22, 131 and 150
Bearing Capacity of Soil.....	38
Bearing Plates and Girder Straps.....	147
Belts, Gutters, Cornices and other Appen- dages.	67
Board of Public Works to Stop Con- struction	151
Boilers, Furnaces, erection of.....	61
Bond Iron	130
Brick, quality of.....	28
Brick and Hollow Tile Partitions.....	122
Brick Walls outside Fire Limits.....	105
Brick, Stone and Iron Walls.....	95
Brick or Stone Veneer.....	15
Bridging	20
Buildings in Fire Limits.....	96
Buildings to be erected or altered.. ...	1

C

Cast-Iron Lintels	146
Cements	32
Cement and Lime Mortar.....	31-33
Chasses and Recesses in Walls.....	123
Chimney Supports	50
Chimneys of Cupolas.....	52
Chimneys, Flues and Fire Places.....	46, 57
Class A, B and C.....	97
Compartments, Dividing	45
Concrete	34
Construction of Walls.....	124-130
Cornices, Belts, Gutters and other Appen- dages	67
Coverings of Roofs.....	74
Curtain Walls	102

D

Definitions	3-11
Definition of Class A, B and C.....	97
Distribution of Loads on Floors.....	142
Details of Timber.....	40-45
Dividing Compartments	45
Dividing Partitions	18
Doors and Shutters, Fireproof.....	134
Drying Rooms	63
Dumb Waiters, Hoists, Elevators.....	76-84
Duty of Board of Public Works—Stove Pipes and Chimneys.....	56
Dwellings, Definition of.....	4

E

Elevators, etc., to be enclosed.....	77
Elevators, Grain.....	135
Elevators, Hoists and Dumb Waiters.....	76-84
Elevator Shafts and Hatchways.....	76
Elevator Shafts, Windows and Doors..	79
Elevators, Sidewalk.....	84
Elevator Ropes and Gearing.....	80
Enclosures of Elevators.....	77
Enclosure Walls, Class 1.....	101
Engineers Stationary Ladders.....	72
Erection of Furnaces, Boilers, etc.....	61
Excavations and Foundations.....	37-39
Exhibition Buildings	136
Existing Party Walls.....	117
Exits for Lodging, Apartment and Tene- ment Houses, Hotels, Hospitals, etc...	86
Exterior Walls for Certain Buildings....	113
Exterior Wall Studding.....	17

F

Fire Escapes and Stand Pipes.....	85-87
Fire Limits, Buildings in.....	96
Fire Openings	57
Fire Walls	120
Fire Places, Flues, Chimneys, etc.....	46-57
Fire Places, Patent.....	54
Fire Proof Buildings.....	97
Fire Proof Room for Heaters.....	59
Fire Proof Shutters and Doors.....	134
Fire Proof Walls.....	95
Flats, Definitions of.....	8
Floor Lights	70
Floor Loads, etc.....	141-143
Floors, Temporary	140
Flues, Chimneys and Fire Places.....	46-57
Foundations	106
Foundations and Excavations.....	37-39
Foundation Walls, Frame Buildings....	16
Foundation Walls.....	107
Framing	19
Frame Factories not over two stories high	23

	Section
Frame Factories over two stories high..	23
Furnaces, Boilers, Erection of.....	61
Furnaces, Heating, etc.....	58-66
Furred Walls	127
Furring	21

G

Gas Grates and Logs.....	48
General Provisions	148-154
Girder Straps and Bearing Plates..	147
Girders, Joists, Wood Beams.....	40
Grain Elevators	135
Gutters, Belts, Cornices, and other appendages	67

H

Hearths	47
Heating Apparatus, Notice as to.....	66
Heating Furnaces, Pipes, etc.....	58-66
Height and Width of Buildings.....	4
Height Limit, Class A, B, C.....	98
Height of Wood Frame Buildings.....	13
Hoists, Elevators and Dumb Waiters...	76-84
Hollow Tile and Brick Partitions.....	122
Hollow Walls	121
Hot Air Boxes.....	60
Hotels, Definition of.....	9
Hot Water and Steam Heating Pipes..	64
House Raising	27

I

Increased Thickness of Walls for Buildings more than 137½ ft. in depth.....	112
Inspector's Right to Enter Buildings.....	152
Interior Walls, Reduced Thickness.....	116

J

Joists, Girders, Wood Beams and Partitions	40
--	----

L

Ladders and Scuttles.....	71-72
Leaders	73
Lime Mortar, Quality of.....	30
Lime and Cement Mortar.....	33
Light and Vent Shafts.....	69
Lights—Floors	70
Lining Existing Walls.....	118
Lintels and Arches.....	125
Lintels, Cast-Iron	146
Loads on Floors.....	141-142
Lodging Houses, Definition.....	11
Logs and Gas Grates.....	48
Lumber	35

M

Mansard Stories within Fire Limits....	75
Manufacturing Buildings	100
Masonry and Iron Walls.....	108
Materials, Tests of.....	36
Materials, Quality of.....	28-36
Measurements for Height and Width of Buildings	4
Mill Construction	99
Mortars	30-33
Mortar for Walls and Ashler.....	111

N

Notice as to Heating Apparatus.....	66
-------------------------------------	----

O

Obstructions on Stairs.....	149
Office Buildings, Definition of.....	10
Ofsets	51
Openings, Fire	57
Openings in Shafts.....	82
Openings in Party Walls.....	129

P

Parapet or Fire Walls.....	120
Partitions	40
Partitions Dividing.....	18
Party Walls Existing.....	117
Party Walls, Openings in.....	129
Patent Fire Places.....	54
Patent Flues and Chimneys.....	53
Penalties	153
Pipes, Smoke	55

Piers and Walls.....	109
Planing Mills, etc.....	138
Plates and Wood Columns.....	42
Pressure under Footings or Foundations.	39
Privies	26
Protection for Girders, Columns, etc....	32
Protection of Hydrants.....	91
Protection of Pedestrians.....	139

Q

Quality of Materials.....	28-36
---------------------------	-------

R

Raising or Lowering Frame Buildings.	27
Ranges and Stoves.....	65
Recesses and Chasses in Walls.....	123
Reduced Thickness for Interior Walls..	116
Registers	62
Rock	34
Roof Covering.....	74
Roofs, etc.....	73-75
Ropes and Gearing for Elevators.....	80
Repealing Sections.....	154

S

Safety Appliances.....	81
Sand	34
Sand, Quality of.....	29
Screens Wire.....	83
Scuttles and Ladders.....	71
Setting of Ranges, Stoves, Candy Fur- naces, etc.	61
Shades, Awnings and Balconies	88
Shafts and Skylights.....	68-69
Shafts Openings.....	82
Sheds	24
Shutters and Doors, Fire Proof	134
Sidewalk Elevators	84
Slow-Burning Construction	99
Smoke Houses	137
Smoke Pipes.....	55
Special Structures	135-140
Sidewalk Work	89-91
Skylights	132
Skylights and Shafts.....	68-69
Specifications for Fire Escapes	87
Stables	148
Stairs, Obstructions on.....	149
Stand Pipes and Fire Escapes	85-87
Stationary Ladders	72
Steam and Hot Water Heating Pipes ..	64
Stone or Brick Veneer.....	15
Storage Buildings.....	100
Stoves and Ranges.....	65
Stove Pipes and Chimneys, Duty of Board of Public Works.....	56
Straps and Anchors for Wood Joists and Girders	41
Strength and Weights of Materials...144-147	
Strength of Temporary Supports.....	143
Studing Exterior Walls.....	17
Supports for Chimneys.....	50

T

Tanks, Tank Towers.....	93-94
Table of Thickness of Walls.....	103-111
Temporary Floors.....	140
Tenement Houses, Definitions of.....	7
Tests of Materials.....	36
Ties and Anchors.....	126
Timber in Walls Prohibited.....	128
Thickness of Foundation Walls, Frame Building	16
Thickness of Walls.....	101-123
Thickness of Walls Increased.....	112
Timber for Trusses.....	43
Timber Details	40-45
Tops of Shafts.....	78
Trimmer Arches.....	46

	Section
Trusses	43
V	
Vaults under Sidewalks	89
Veneers, Brick or Stone.....	15
Vent and Light Shafts.....	69
W	
Walls	14-95
Walls and Piers.....	109
Walls in part Masonry and Iron ..	108
Walls in part Masonry and Stone	108
Walls Furred	127
Walls, Hollow.....	121
Walls, Lining of Existing.....	118
Walls of Unfinished Buildings at time of Passage of this Ordinance.....	119
Walls on Street Corners.....	115
Walls over 25 ft. apart and not to exceed 100 ft. apart.....	114
Wood, Frame Buildings in Fire Limits..	24-27
Wood Columns and Plates.....	42
Water Closets	26
Weights and Strength of Materials..	144-145
Windows and Doors in Elevator Shafts..	79
Windows, Bay	131
Wire Screens	83
Wood Beams, Joists, Girders and Parti- tions	40
Wood Frame Buildings.....	12-28

THE DAILY PACIFIC BUILDER circulates among the leading Architects, Builders, Sub Contractors, Manufacturers, Agents, Owners, Real Estate offices and Municipal Authorities on the Pacific Coast. The Best Medium in which to advertise Building Materials—Advertise in the Builder and be in good company.

1508 Market St. Tel. South 781 .

Telephone Main 1101.

JOHN R. BLAND,
President.

GEO. R. CALLIS,
Secretary-Treasurer.

CASH CAPITAL \$1,650,800.



**The
UNITED STATES
Fidelity and Guaranty
Company.**

HOME OFFICE
CALVERT AND GERMAN STS
BALTIMORE, MD.

We are prepared to furnish the bonds of Contractors at short notice, without any unnecessary red tape. We beg the opportunity to serve you.

ROBERTSON & HALL

Managers for

California, Nevada, Arizona and Hawaii

216 SANSOME STREET
San Francisco - California

CAMPBELL, METSON & CAMPBELL
RESIDENT COUNSEL.

ELATERITE is Mineral Rubber.

For Flat and Steep Roofs there is Nothing so Good as

"IT NEVER WEARS OUT"

ELATERITE ROOFING

TRADE MARK

Tempered to suit all climates. In rolls, easy of transportation. Proof
against wind, water, rust, steam and acids. Never needs painting
AND—THE PRICE IS RIGHT

It will pay to write for samples and information

THE ELATERITE ROOFING CO.

713 Market Street, San Francisco

J. LEO PARK

JOHN BARNETT

The

BARNETT-PARK CO.

**HEATING AND VENTILATING
CONTRACTORS**

DANIEL MEYER BUILDING

214 PINE ST.

ROOM 55

SAN FRANCISCO

TELEPHONE JOHN 2381

CALIFORNIA